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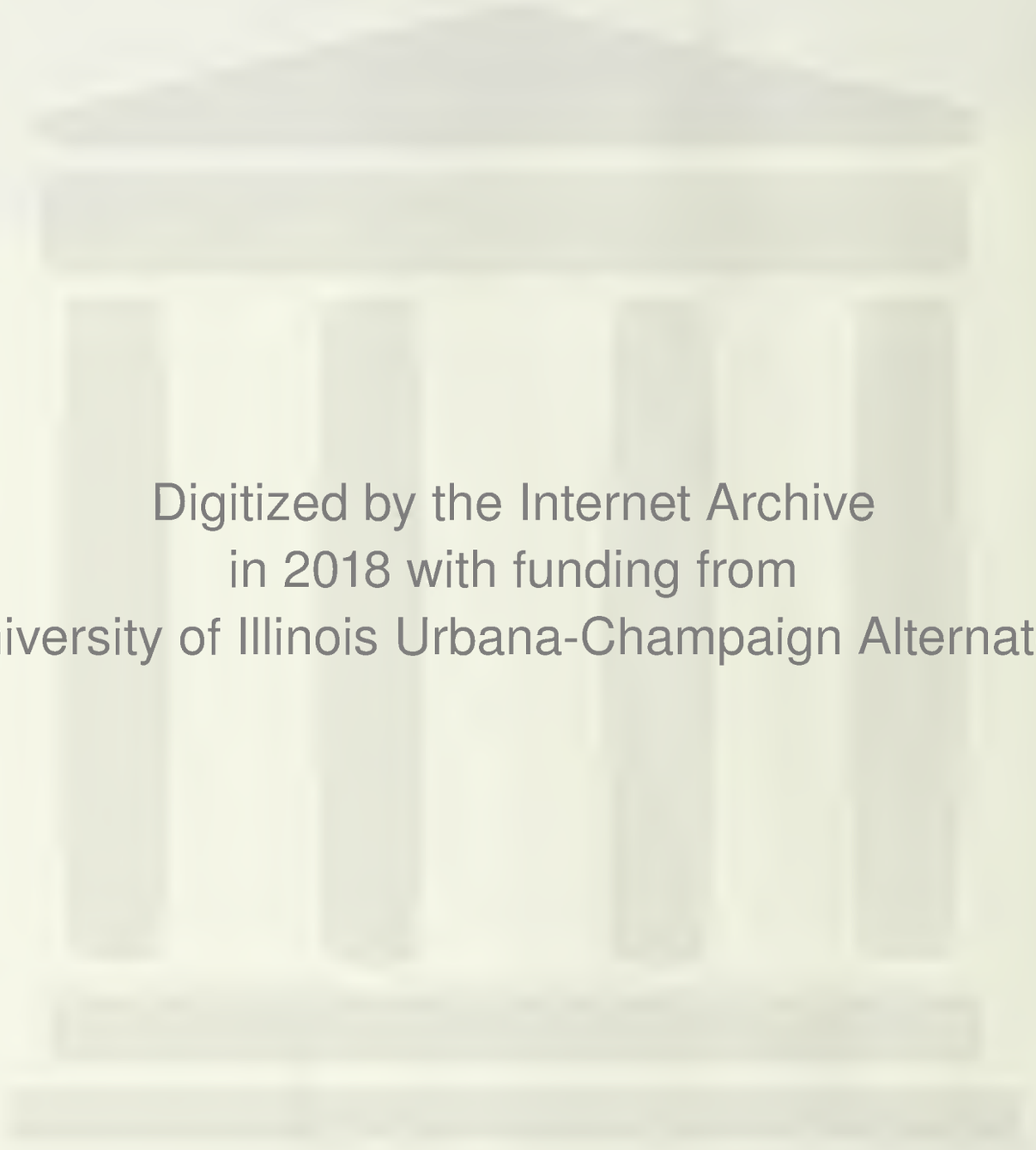


An Illinois Site for Coalcon Clean Boiler Fuels Project

A Proposal to Coalcon Company

prepared by

The State of Illinois
Department of Business and Economic Development
Division of Energy

June 20, 1975

14-EN:
C0064

Geol Survey

An
Illinois Site
for
Coalcon
Clean Boiler
Fuels Project

STATE OF ILLINOIS
OFFICE OF THE GOVERNOR
SPRINGFIELD 62706

DAN WALKER
GOVERNOR

June 3, 1975

Mr. Stanley Noss
President
Coalcon Corporation
One Penn Plaza
New York, New York 10001

Dear Mr. Noss:

The State of Illinois is pleased to transmit to Coalcon Corporation its recommendation for siting. At our previous meeting, I expressed our interest in actively seeking participation in the proposed Coalcon project. To this end, I had directed the various State agencies to assemble and present a strong site selection proposal.

The following document delineates a site which meets all the criteria outlined in Coalcon's requirement criteria. It is my firm belief that the site chosen is one which offers significant advantages and incentives to Coalcon, and one which should put Illinois in a most favored position for potential siting. The State, through its various agencies, stands ready to answer any questions you may have on this document and is anxious to commence formalizing the terms included therein.

I commend Coalcon for its leadership and farsightedness in proposing a significant coal conversion project, and fully support your efforts. I look forward to continued cooperation between the State of Illinois and Coalcon in this important undertaking, and hope that by working together the Coalcon project will move ahead to successful construction and operation.

Sincerely,

Dan Walker

An Illinois Site for Coalcon Clean Boiler Fuels Project

Introduction

The State of Illinois, with its large coal reserves, has great interest in developments to increase the utilization of this resource. We applaud the recent awarding of a contract, by the Office of Coal Research to the Coalcon Company, to further develop their unique process for converting coal into a clean useable fuel.

To achieve greater utilization of the coal in Illinois, the State has been developing legislative programs and an administrative structure to ensure that its activities will be timely, yet responsible. For example, recent enactment of the Illinois Coal Development Bond Act provides $70 million in state bonds to develop Illinois coal. The Department of Business and Economic Development (BED) administers the bonding authority. Funds are made available to assist projects that will encourage the use of Illinois coal. By applying research concepts to demonstration facilities, new technologies can be tested and perfected on Illinois coal and the construction and operation of these demonstration facilities can provide economic benefits to the workers of Illinois while developing a fuel and technology to meet the state's and the country's energy needs.

Another bill recently enacted to promote the development of coal allows BED to exercise the right of eminent domain in the acquisition or use of land for coal development projects.

An Advisory Council on Coal Development, consisting of the governor, lieutenant governor and the directors of state departments relevent to coal development, was created to advise BED. The existence of such a council promotes coordination and cooperation between the various departments. Illinois is fortunate that, over the years, the departments associated with coal development have been adequately funded and staffed with competent personnel. As a result, there now exists an excellent data base to aid both the State and industry in formulating and accomplishing their objectives. The cooperation and coordination of these departments was clearly evident in the preparation of this proposal and, were it not for the existence of the tremendous data base, the preparation of this detailed proposal within the alloted 3½ weeks would not have been possible.

In formulating its long-term energy strategy to utilize Illinois coal, BED, through its Division of Energy, has made a formal proposal to the U.S. Bureau of Mines to establish a federal research station at Carbondale. This research station would coordinate its efforts with the Coal Extraction and Utilization Research Center recently established at Southern Illinois University, at Carbondale. The function of the Center is to study problems associated with mining of coal and reclamation of surface mines. In recognition of the problem of obtaining and training the highly skilled manpower required for modern coal mining, three Southern Illinois Junior Colleges have programs to train, retrain or upgrade workers for Illinois mines.

An Illinois Site for Coalcon Clean Boiler Fuels Project

The ultimate success of Coalcon's coal-to-clean boiler fuel demonstration project will be measured in terms of the degree to which technical feasibility is proven, the economic viability of the process, and the extent to which it becomes commercially acceptable. The site chosen for the project will certainly have a significant influence on the probability of adequately demonstrating these factors. Illinois has an attractive site that will compliment Coalcon's demonstration of the technical and economic feasibility of their process. In addition, the State is eager to work with Coalcon in developing ways to utilize the coal resources. The preceding discussion described the State's commitment to this goal and some of its available assets.

Details of the proposed site are summarized below, followed by a description of a number of attractive economic incentives the State is prepared to make as its contribution to this significant research project. The material for this site description was compiled by a number of cognizant state departments and was edited by the Division of Energy. The material represents the collective opinions of these departments and includes the negative as well as the positive features of the proposed site. It was originally intended to propose three alternative sites. It soon became apparent, however, that the site described below met practically all the Coalcon requirements and was far superior to the alternatives. This, plus the desire to describe this site as thoroughly as possible in the short time allotted, resulted in dropping the other two sites from this proposal.

Summary of Proposed Site

Site Requirements: The site proposed by the State of Illinois for the Coalcon coal conversion plants is located between New Athens and Fayetteville in the Kaskaskia River Valley in southeastern St. Clair County, approximately 30 miles southeast of St. Louis. The attractiveness of this site is based on the availability of all the needed site requirements and the close proximity to a major metropolitan area and adequate transportation of all types. Figure 1 illustrates the site, looking from New Athens northeast toward Fayetteville. Figres 2a, b and c are aerial photos of the area.

The New Athens-Fayetteville site area is situated on the southwestern margin of the Illinois Coal Field, within one of the most productive regions of Herrin (No. 6) coal in Illinois. There are about 1.6 billion tons of mapped reserves within the six-township area surrounding the proposed site; an amount which could provide seven times the estimated 110 million tons required by the commercial plant over a 20 year period.

Specifically, the site offers adequate coal for both the demonstration plant and an eventual commercial plant. Peabody Coal Company, whose River King mine is the most productive strip mine in Illinois, will commit the coal needed for the demonstration project. Pit No. 3 of this mine lies adjacent to and within the proposed site. The coal committed by Peabody will be supplied at costs that are at least as competitive as other sources.

NEW ATHENS SITE

Summary of Proposed Site

Figure 1

NEW ATHENS SITE

Summary of Proposed Site

Fig. 2a

Summary of Proposed Site

Fig. 2b

NEW ATHENS SITE

Summary of Proposed Site

Fig. 2c

Summary of Proposed Site

Coal delivery to the demonstration plant can be determined on the basis of convenience and lowest cost because the proposed site location and topography does not preclude any of the conventional means of conveying coal. The feasibility of disposing of solid wastes at the nearby River King Strip Mine appears to be excellent.

Water for the coal conversion facilities will be taken directly from the Kaskaskia River, which is immediately adjacent to the proposed site area, Figure 3. The Kaskaskia River system includes Carlyle Reservoir and Lake Shelbyville, and this river has been dredged for barge traffic from Fayetteville to the Mississippi River. An agreement between the State of Illinois and the U.S. Army Corps of Engineers apportions 14% of the water stored in the two reservoirs to Illinois and gives the State the right to all additional flow exceeding the Federal requirements for maintaining the navigational pool in the lower reach of the Kaskaskia River.

It has been estimated that, except on rare occasions, at least 65 million gallons per day (mgd) will be available for consumptive use below the Carlyle dam. Projected commitments through the year 2010 amount to only 20 mgd, thereby leaving 45 mgd available for the coal conversion plant. In the unlikely event that additional water is required for the plant, water could be pumped to the site from the Mississippi River, utilizing the navigation channel as a conduit. (See figure 3.) Pumping costs would be minimal because the water lift is a maximum of 23 feet and pumping would be required only during extreme low flow periods.

Water quality in the New Athens-Fayetteville reach of the Kaskaskia is excellent as a result of the river basin being sparsely populated and the land use being primarily agricultural. State-owned land adjacent to the river, and the resulting riparian rights, assures access to the water and provides the needed frontage for water intakes and discharge flumes.

Power to this site would be provided by the Illinois Power Company through an existing 138 kilovolt (kv) connection within one mile of the proposed site. Illinois Power has an excellent performance record, has adequate system reserves, and has not required voltage reductions or load shedding during the last 5 years.

Communications would be provided by the Illinois Bell Telephone Company. The capacity of its switching equipment in New Athens is triple its current installations. Any new service requirements in the New Athens exchange can be ready as soon as required.

Construction labor requirements for the project can be met by the more than 5700 construction workers within 30 miles of the proposed site. Unemployment among construction workers averaged 27% during 1974. Union representatives have expressed a willingness to investigate a "no-strike" contract for the length of the project, thus assuring no delays due to work stoppages. Only two major construction projects are currently underway: a large shopping center and a multi-million dollar expansion of the Monsanto facilities, which will be completed in the near future.

Summary of Proposed Site

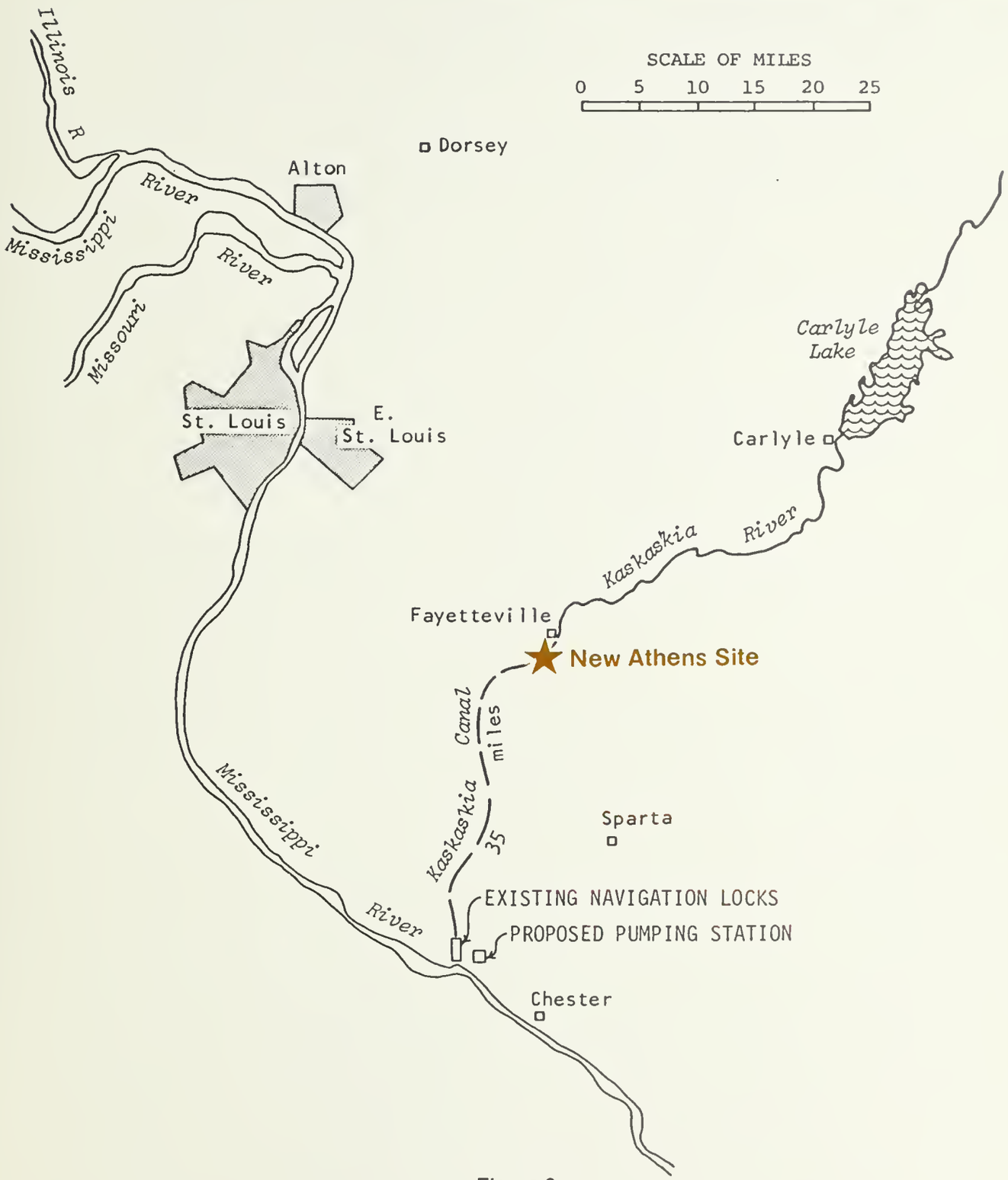


Figure 3

Summary of Proposed Site

Adequate operating and maintenance personnel are available in the St. Louis Metropolitan Area. Of the total labor force of 1 million, more than 21,000 are employed in chemical and allied industries. A large pool of skilled labor has been created by five major employers in the chemical field. They are the Monsanto Company, Olin Corporation, Laclede Gas Company, Shell Oil Company (refinery) and American Oil Company (refinery).

Union organizational efforts have been relatively nonmilitant, with 44 National Labor Relations Board elections resulting in the organization of 22 firms. During 1972, time lost due to work stoppages was only 0.21% of the total.

More than 40,000 professional and technical personnel live in the major metropolitan area. Of that number 18,000 are engineers, 10,000 are engineering and science technicians and 12,000 are engaged in various specialties.

There are four major universities, 16 colleges and four junior colleges in the St. Louis area with an enrollment of more than 89,000 students. Just outside the metropolitan area are two additional universities: Southern Illinois University at Carbondale and the University of Missouri, which has an outstanding engineering school at Rolla.

The life style in the region is that of a cosmopolitan area with symphony orchestras, theater, ballet, museums and parks. Beautiful outdoor recreation areas are within easy driving distance in the Shawnee National Forest in Southern Illinois and in the Ozarks in Missouri.

The proposed site location between New Athens and Fayetteville contains approximately 2000 acres of land owned by Peabody Coal Company, about half of which represents the active or mined-out areas of the River King Mine Pit No. 3. Another 2200 acres of land bordering both sides of the river, outlined in Figures 2a, b and c, is owned by the State of Illinois; approximately 400 acres in the area are privately owned and are used for agricultural purposes.

The State land will be made available to Coalcon for purposes of plant construction, rights-of-way, loading/unloading or any other necessary functions of the proposed project. A lease arrangement has been discussed that will result in a minimal cost to Coalcon. The Peabody Coal Company has agreed to negotiate an option, lease or sale of portions of its land on a reasonable and economically attractive basis. Peabody has agreed to keep the land in question available until a site decision is made by Coalcon. Finally, it should be noted that the Department of Business and Economic Development maintains rights of eminent domain which could be used, if necessary, to acquire small parcels of land which become unobtainable. There are aspects of strip mining that are controversial, including the question of how to utilize reclaimed land. The State of Illinois suggests that, for purposes of this project, reclaimed land be used as part of the proposed site. The environmental, political and public relation aspects of this concept become immediately obvious.

NEW ATHENS SITE

Summary of Proposed Site

The topography of the proposed site area consists of flood plain near the Kaskaskia River, with an elevation of between 380 to 400 feet above mean sea level (MSL). A system of terraces exists at elevation between 400 and 430 feet. Along the south side of the river, in sections 30 (T2S, R6W) and 26 (T2S, R7W), are two area of upland till plain. The one in section 26 rises to an elevation of 460 feet and the one in section 30 rises to an elevation above 490 feet. The terrace sediments lie against and cover the lower slopes of these till plain prominences. (See inside cover pockets for a topographical map.)

The flood of record at New Athens, prior to construction of Carlyle Reservoir, is 398.8 feet above MSL. Since completion of the Carlyle Reservoir in 1967, the maximum water level at New Athens has been 368.6 feet above MSL.

The proposed site lies within St. Clair County, which has a population of 285,000. The town of New Athens, population 2,000, lies 2 miles west and Fayetteville, population 379, lies 4 miles northeast. The county lies within the St. Louis Standard Metropolitan Statistical Area (SMSA), which has a population of 2.4 million. St. Louis lies 30 miles to the northwest.

The geology of the area is characterized by unconsolidated deposits, consisting of glacial deposits (drift), recent river deposits (alluvium) and windblown silt (loess), that overlie the bedrock. These unconsolidated deposits range in thickness from 20 feet on the uplands to over 100 feet in the river valley. The upland till plain is a favorable area for siting heavy construction. The terrace areas adjacent to the upland till plain are underlain at depths of 20 to 30 feet by bedrock or till and may prove to be feasible sites for heavy construction. Parts of the flood plain consist of compressible organic deposits that may allow settlement of material under loading. Spoil piles in the strip mine area may be feasible for construction if bearing loads are supported by specially designed structures such as a soil cemented monolith.

The availability of groundwater is variable throughout St. Clair County. Beneath the uplands the thin, discontinuous sands and gravels are capable of yielding only small supplies, whereas deposits in the larger stream valleys are capable of yielding moderate to large supplies. As the depths of the bedrock increase in the eastern part of the county the groundwater becomes to highly mineralized for most uses.

Transportation services available to the proposed site are excellent. The Illinois Central Gulf Railroad, which furnishes fast and reliable service through New Athens, has some of the highest quality tracks in Illinois. The track layout at New Athens consists of a passing track, an intermediate siding, three storage tracks and a mine lead from the storage tracks to the River King Mine Pit No. 3. Adequate switching would be made available, as would any number of cars needed by the shipper. (Railroad map is inside cover pocket.)

Summary of Proposed Site

The New Athens-Fayetteville site area is serviced by U.S. Route 460, a divided, multilane highway with partial access control, and Illinois Route 13, a two-lane highway that imposes no special size or weight limitations. St. Clair County roads are in very good condition and many have been recently improved with bituminous overlay. The County Highway Commissioner has expressed an eagerness to facilitate the proposed site by offering to extend and improve, at no cost, county roads which feed into the proposed site. (Highway maps in inside cover pocket.)

New Athens and Fayetteville are easily accessible by scheduled intercity buses. Commercial airline service is available at the St. Louis International Airport, an approximate 1¼ hour drive from New Athens. Private airport facilities are available at Sparta, about 15 minutes from New Athens.

Pipelines in the proposed site area are capable of transporting any product produced by the plant. A 16-inch natural gas pipeline servicing Illinois Power Company's storage system passes approximately one-half mile southwest of the proposed site. Several large gas pipelines owned by the Natural Gas Pipeline Company of America pass about 30 miles to the east and two Mississippi River Transmission Corporation pipelines pass about 15 miles to the west. Phillips Pipeline Company has two refined products pipelines about 19 miles northwest and two water-soluble fertilizer solution lines pass about 8 miles to the northwest. (See inside cover for pipeline map.)

Barge service capable of transporting up to 20 million tons of coal per year will be available on the Kaskaskia following completion of the navigation channel in 1978.

The New Athens site was chosen for Coalcon because it offers the ideal surroundings for a successful demonstration and commercial coal conversion facility. The proposed site lies on, and is surrounded by vast coal reserves, a plentiful water supply for both consumption and navigation purposes, and a transportation system that offers optimal use of all modes.

We, in the State of Illinois, are eager to have the plant located in this state because we are intensely interested in the future commercial success of coal conversion.

In addition to a superior site, the State of Illinois will offer or arrange for some additional and very meaningful incentives that will lower the project costs and, at the same time, illustrate clearly the State of Illinois' commitment to coal development.

Summary of Proposed Site

Incentive #1 The State of Illinois is in a unique position to facilitate the development of coal. The Division of Energy administers a $70 million bonding authority for coal development. These funds may be expended by the Division after approval by the Illinois Energy Resource Commission. The Energy Resource Commission has indicated its desire to become financially committed to this project. The Division of Energy has concluded that the Coalcon project is one which warrants serious consideration for State funds. We are presently not in a position to formally recommend a precise dollar figure because adequate technical review of the project must be undertaken. However, the Division feels that a figure of $25 million is a reasonable estimate of Illinois' contribution to this major project.

Incentive #2 Having met with representatives of the State of Illinois, Peabody Coal Company is willing to commit to the demonstration phase project the needed amount of Illinois coal at a very attractive and competitive price.

Incentive #3 Although the State has a sizeable investment in the channelization of the Kaskaskia River, water will be offered at no charge to Coalcon for the demonstration life of the project.

Incentive #4 The proposed site eliminates many of the traditional problems of land acquisition because of the nature of the area ownership. The State of Illinois, which owns virtually all of the river frontage between New Athens and Fayetteville, will lease to Coalcon any portion deemed suitable for a nominal annual cost of $10 per foot of river frontage and $75 per acre of backland. Peabody Coal Company has agreed to discuss with Coalcon the use of reclaimed strip mine and farm land they own in the proposed site area and to withold their land from the market until after the site has been selected. Additionally, BED can exercise the right of eminent domain for the acquisition of land for coal development, should it become necessary.

Incentive #5 The county of St. Clair is eager to cooperate with the Coalcon project and has indicated they will extend county roads to the Coalcon property lines at no cost, thus giving access to nearby State roads.

Incentive #6 St. Clair County has also offered a tentative 5 to 10 year property tax moratorium for lands leased by the State of Illinois to the Coalcon project. Additionally, the county has indicated that they have wide discretion on valuation of the leasehold.

Incentive #7 Perhaps one of the most valuable incentives is the attitude and personality of the local community. The people that have been contacted in and around St. Clair County have indicated that a major coal conversion facility would be met with enthusiasm and support. Coalcon's desire to be a good neighbor will be reciprocated by the people of Southern Illinois.

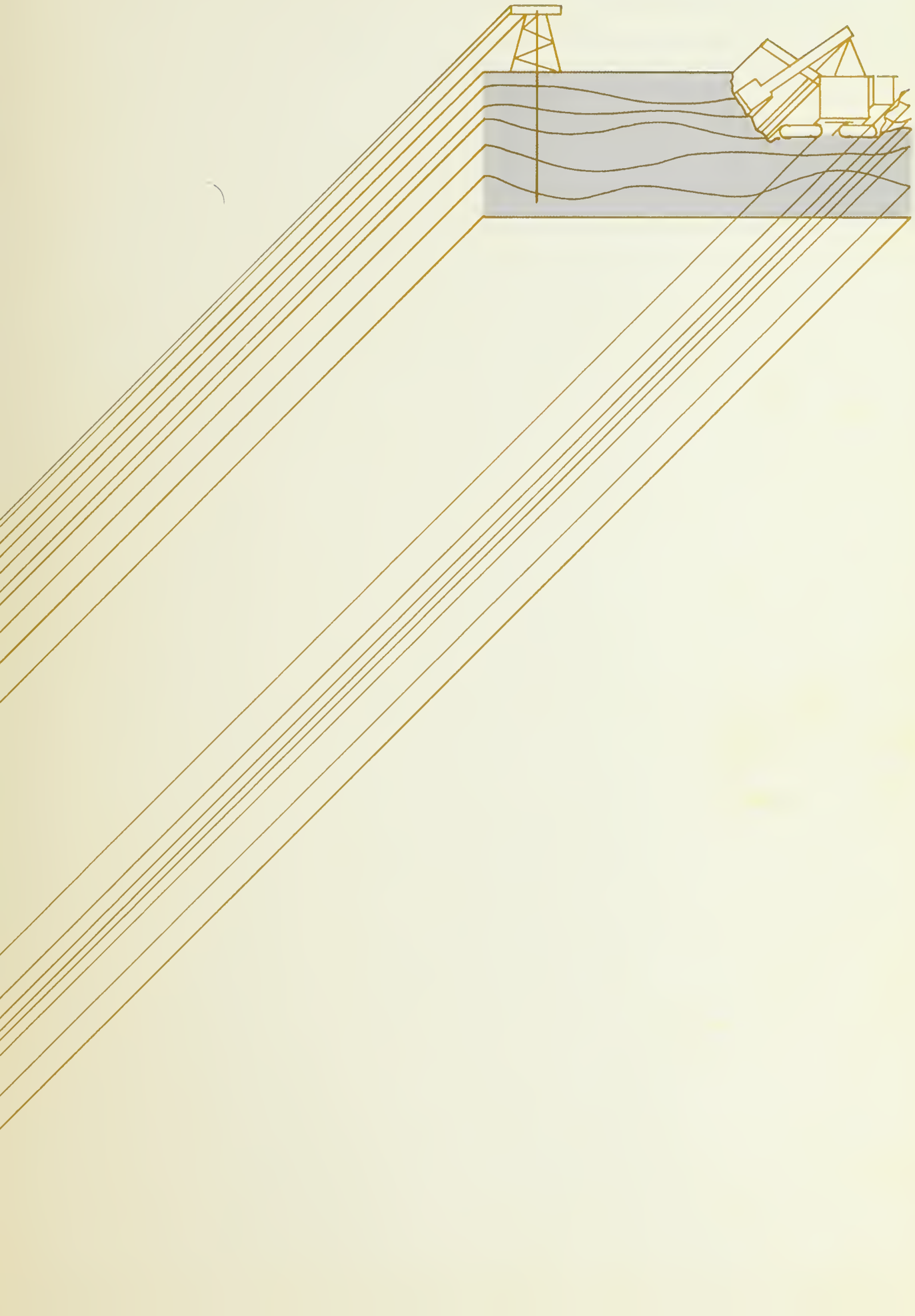
The following sections provide a complete description of the proposed site, utilizing the format of the outline of Site Requirements submitted by Coalcon. The numbering system used in this proposal coincides with the numbering system in the Coalcon outline.

New Athens Site

New Athens Site

Contents/ New Athens Site

1. Raw Materials and Resources



1.

1. Raw Materials and Resources

1.1 COAL

1.1.1 Type/Seam

The New Athens-Fayetteville site area is situated on the southwestern margin of the Illinois Coal Field, within one of the most productive regions of the Herrin Coal in Illinois. The coal supply for a conversion plant in this area would come from the Herrin (No. 6) Coal seam, a high volatile bituminous coal that has been the basis of a large coal industry in the region for many years. The coal in the adjacent five-county region lies at moderate depths, generally less than 600 feet (Figure 1.1.1) and is 6 to 7 feet thick. The coal mining area has a history of generally good roof conditions.

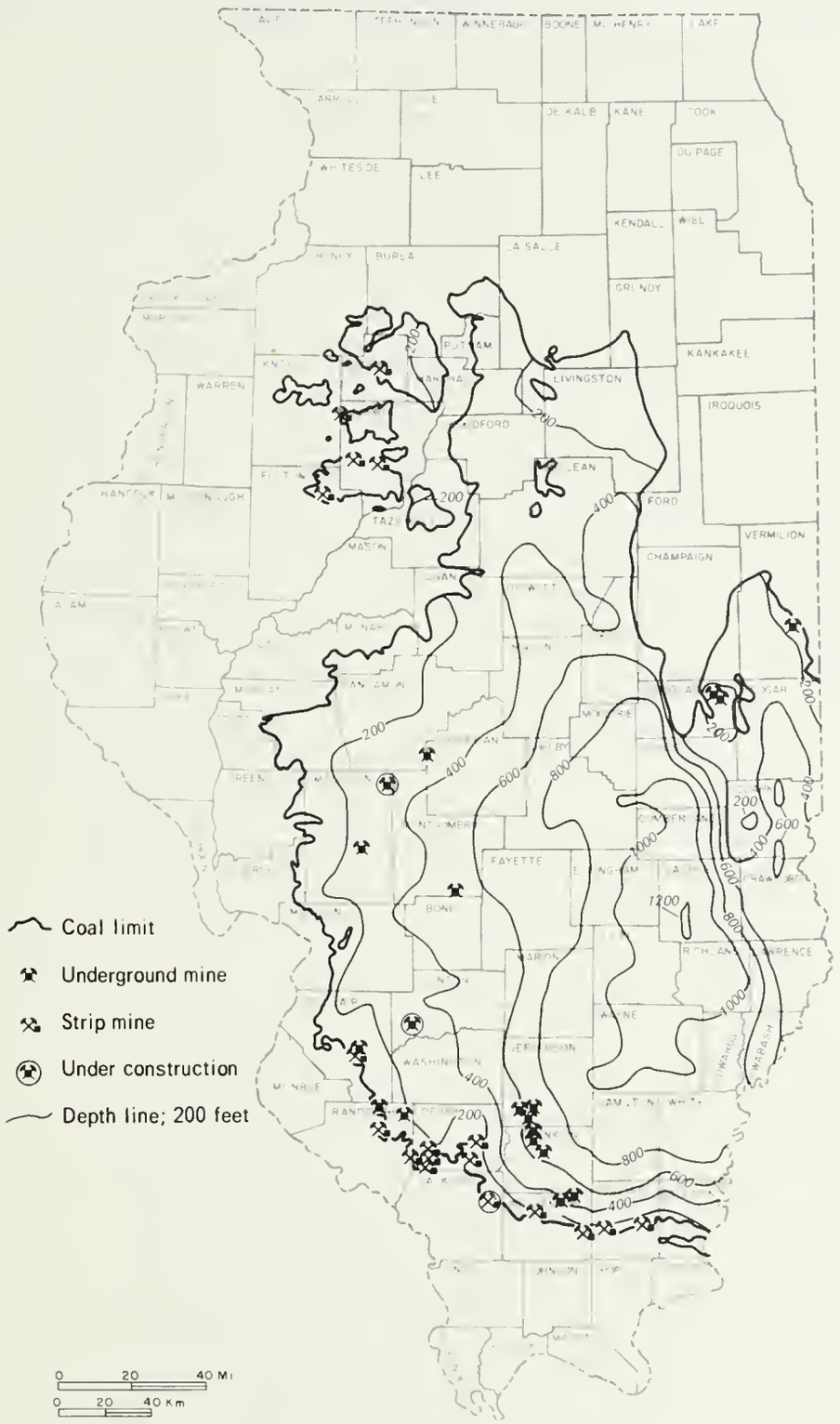
A demonstration coal conversion plant at the proposed site would receive coal from the nearby Peabody River King strip mine. A commercial facility would receive coal from nearby deep mines, strip mines, or a combination of the two.

1.1.2 Quantity

There are about 1.6 billion tons of mapped reserves of Herrin Coal within the six townships adjacent to the New Athens-Fayetteville site area shown on Figure 1.1.2. This map shows the distribution of reserves for both strip and underground mining. The total reserves of coal in these townships is tabulated by 1-foot increments of thickness in Table 1.1.1. The 1.6 billion tons of in-place coal for the six townships near the plant site is seven times the estimated 110 million tons required to supply a full-scale plant for 20 years. This is based on a recovery factor of 50% of the in-place coal.

The proposed site area lies in a very productive coal mining region. Located within 30 miles of the site are 11 large mines that produced a total of over 22 million tons in 1974: eight are surface mines and three are underground mines (Table 1.1.2) Pit No. 3 of Peabody's River King strip mine is located nearby on the east side of New Athens. Two additional underground mines lying within 15 miles of the site have been announced or are under construction. Monterey Coal Company's No. 2 Mine is under construction near Albers in Clinton County, about 15 miles to the northeast. Zeigler Coal Company has announced that they will construct a new underground mine in northeastern Randolph County, about 14 miles southeast of the proposed site.

1. Raw Materials and Resources

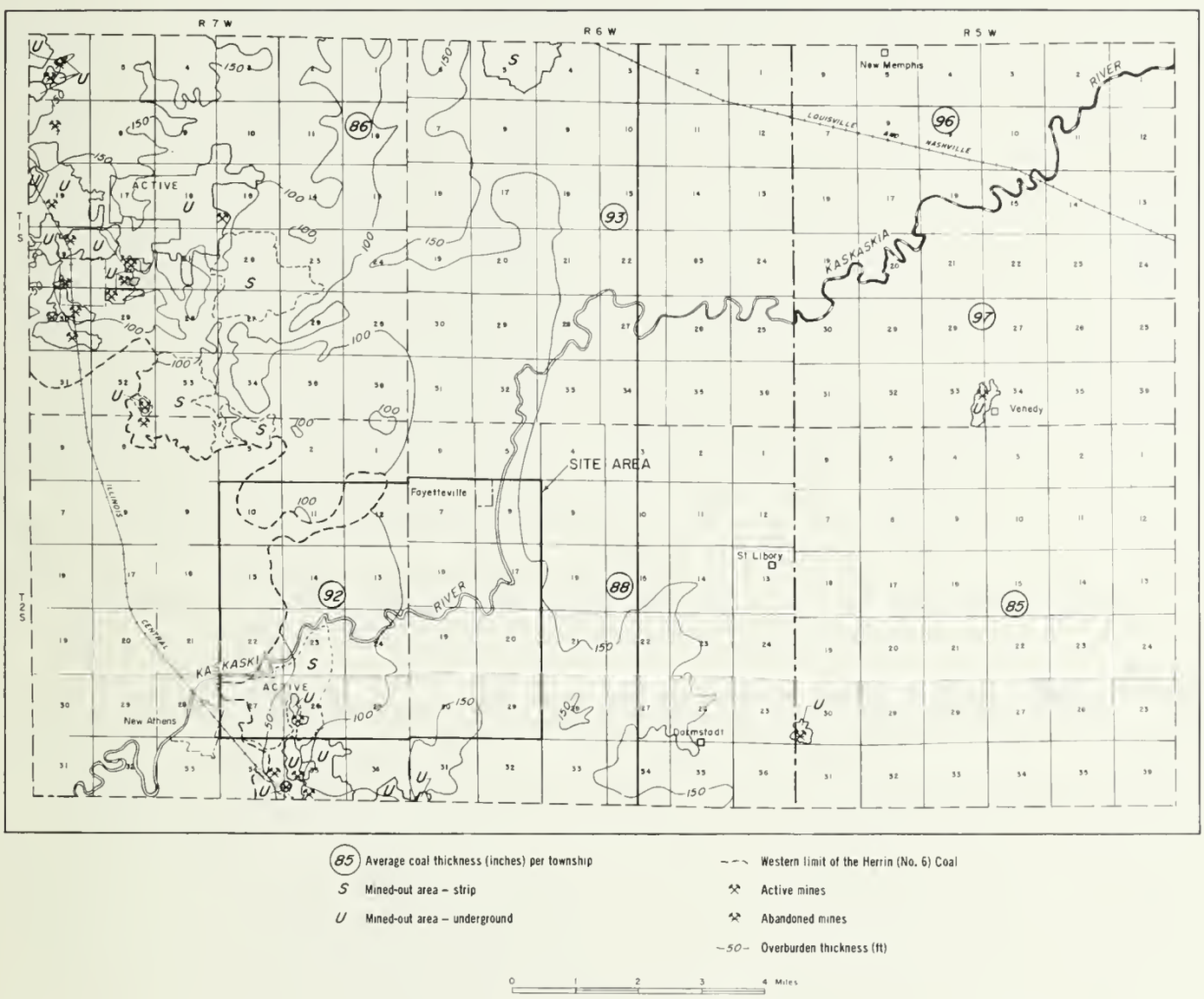


Illinois State Geological Survey

Coal Resources of the Herrin (No. 6) Coal in the vicinity of New Athens-Fayetteville site area.

Fig. 1.1.1

1. Raw Materials and Resources



ILLINOIS STATE GEOLOGICAL SURVEY

Generalized depth of Herrin (No. 6) Coal. Mines active in the Herrin seam on January 1, 1975, are indicated.

Fig. 1.1.2

1. Raw Materials and Resources

Table 1.1.1

HERRIN (No. 6) Coal Reserves Near Site Area
(Thousand Tons)

County	TWP	Average Thickness of Coal Seam (feet) 6	7	8	9	10	Totals
Clinton							
	1S-5W	—	16,692	88,381	13,582	—	**118,655**
St. Clair							
	1S-7W	70,930	140,314	—	—	—	**211,244**
	1S-6W	—	170,957	142,772	3,852	—	**317,581**
	2S-7W	53,815	29,515	1,526	—	—	**84,856**
	2S-6W	7,076	207,003	105,766	—	—	**319,845**
Washington							
	1S-5W	—	21,208	149,207	43,131	10,253	**223,799**
	2S-5W	9,973	236,744	55,102	—	—	**301,819**
TOTALS FOR AREA		**141,794**	**822,433**	**542,754**	**60,565**	**10,253**	1,577,799

Table 1.1.2

Active Mines Near the New Athens-Fayetteville Area

Mine	Approximate Distance	1974 Production
Peabody Coal Co. River King Tipple	7-8 miles NW	
Strip Mine		4,599,887
Underground Mine		1,926,760
Peabody Coal Co. Baldwin Underground	10 miles S	1,720,862
Zeigler Coal Company Spartan Underground	13 miles SE	728,877
Consolidation Coal Co. Burning Star No. 3 Strip	15 miles SSE	1,233,954
Southwestern Ill. Coal Corp. Streamline Strip	21 miles SE	1,215,384
Consolidation Coal Co. Burning Star No. 4 Strip	23 miles SE	1,622,101
Southwestern Ill. Coal Corp. Captain Strip	24 miles SE	4,344,970
Amax Coal Co. Leahy Strip	26 miles SE	2,834,134
Consolidation Coal Company Burning Star No. 2 Strip	29 miles SE	1,107,733
Freeman United Coal Co. Fidelity Strip	30 miles SE	1,206,918
		22,541,580

1. Raw Materials and Resources

1.1.3 Quality of Coal

Illinois coals are all of high volatile bituminous rank. In the proposed site area the classification of the Herrin (No. 6) Coal is toward the upper range of high volatile C rank. Detailed analyses, including proximate and ultimate analysis, minor and major elements, and trace elements are shown in Tables 1.1.3-6. The moisture content is reported to range from about 10% to 13%.

Washability data, for the Herrin (No. 6) Coal from the nearby Peabody Coal Company River King Strip Mine, show that the ash content can be reduced to about 10%, with about 85% recovery on a dry basis. However, if calculated on a moist basis, recovery would be approximately 90% with 10% ash. Sulfur can be reduced to about 3.3% with similar recovery. By far the greatest reduction in sulfur is through removal of pyritic sulfur.

Table 1.1.3

Analyses of Herrin (No. 6) Coal
Peabody River King Strip Mine
St. Clair County

	Tipple Sample		Channel Sample	
	Run of Mine	Washed (10% Ash) 11.1% Ash on Dry Basis	M.A.F.	As Received
Volatiles (%)	34.1	37.6	46.3	36.2
Fixed Carbon (%)	38.4	42.4	53.7	42.2
Ash (%)	17.5	10.0		11.8
Moisture (%)	10.0+	10.0+		10.0+
H_2 (%)			5.43	5.36
C (%)			78.33	61.24
N_2 (%)			1.68	1.31
O_2(%)			10.18	16.84
S (%)	4.07	3.20	4.38	3.43
Sulfate sulfur	0.07		0.10	0.07
Pyritic sulfur	2.15		1.84	1.44
Organic sulfur	1.85		2.45	1.92
Btu/lb.	10,477	11,206	14,007	10,954

*Calculated from Moisture, Ash Free value.
+Coal samples from this area generally contain 10 to 13% moisture.

1. Raw Materials and Resources

Table 1.1.4

Ash Fusion Temperatures of Herrin (No. 6) Coal, Peabody River King Strip Mine, St. Clair County

Initial Deformation	2060°F
Softening Temperature	2235°F
Hemispherical Temperature	2250°F
Fluid Temperature	2320°F

(10% Ash Coal in Reducing Atmosphere)

Table 1.1.5

Analysis of Trace Element Herrin (No. 6) Coal St. Clair County

	ppm		ppm		ppm
As	2.1	F	69	Pb	6
B	132	Ga	3.3	Sb	0.3
Be	1.5	Ge	4	Se	1.9
Br	15	Hg	0.17	Sn	5
Cd	<0.5	Mn	54	V	17
Co	2	Mo	8	Zn	28
Cr	12	Ni	12	Zr	65
Cu	12	P	<10		

Table 1.1.6

Major and Minor Elements Herrin (No. 6) Coal St. Clair County

	Percent*
Al	1.29
Ca	0.50
Cl	0.04
Fe	2.94
K	0.15
Mg	0.04
Na	0.029
Si	2.77
Ti	0.06

*(Moisture-free whole coal)

1. Raw Materials and Resources

1.1.4 Supplier

The source of coal for a demonstration coal conversion plant at the proposed site will be an existing strip mine owned and operated by the Peabody Coal Company. Pit No. 3 of the River King Strip mine is located at the western edge of the proposed site area. (Figure 2a and b.) The Peabody Coal Company has indicated they will make a commitment to supply the required coal for the demonstration plant.

The proximity of the demonstration plant to the mine will depend upon where the site is located within the proposed site area. If located toward the New Athens end of the area, the site would be immediately adjacent to the mine. If located toward the Fayetteville end of the area, the site would be a maximum of three miles from the existing mine pit.

The means of delivery of coal to the demonstration plant can be determined on the basis of convenience and lowest cost. The proposed site location and topography does not preclude any of the conventional methods of conveying coal. Coal from other regions of the country to be tested in the demonstration plant may easily be shipped to the site by either barge or train.

An alternate source of coal should not be required in view of the Peabody Coal Company's commitment to supply the required quantities. However, the proposed site is located within one of the most productive coal regions in Illinois and no problems are anticipated in obtaining alternate sources should this be required. Table 1.1.2 lists the active mines in the vicinity of the proposed site. Section 1.1.3 discusses two other nearby mines in the planning and construction stages.

1.1.5 Costs

The coal committed by Peabody to the demonstration plant will be supplied at prices that are at least as competitive as other sources. The Peabody Coal Company has expressed great interest in developing a viable coal conversion industry in this area and has indicated a willingness to be most cooperative.

The coal will be supplied on a contract basis and Coalcon will not have to rely on "spot-market" coal.

1.1.6 Disposal of Ash and Sludge in Mines

The feasibility of disposing of the solid waste at the mine in the form of ash and sludge, is excellent. Surface drainage at the mine can be adequately controlled, diverted, contained or changed by proper engineering and grading. In addition, the mine disposal site is environmentally improved by the incorporation of combustion byproducts at an initial pH of approximately 11.0, into a mine spoil that may have a pH of approximately 4.0.

Water-bearing sand and gravel deposits are found throughout the portion of the river valley in the vicinity of the site. In most areas, however, these deposits are overlain by approximately 20 feet of silty overburden. This overburden is felt to be adequately impermeable to allow for the disposal of solid wastes.

The technology of dust control is well established and, with proper implementation, should produce no adverse environmental impacts.

In summary, a properly operated ash and sludge landfill should pose no hazard to the ground water in the mine area. The use of strip mine lands for solid waste disposal is a promising way of reclaiming them.

1. Raw Materials and Resources

Several options are available to Coalcon with respect to disposing of the solid wastes.

Case I: If the ash and sludge are generated on and disposed of on Coalcon's property (this assumes that mine and plant co-exist on the same property), then: (1) Coalcon would not need a permit from the Illinois Environmental Protection Agency (IEPA) to operate its waste disposal site, but (2) the landfilling operation must conform to the Solid Waste Rules and Regulations of the IEPA.

Case II: If the ash and sludge wastes are generated on Coalcon's property and are transported to the coal mine for disposal, then the owner/operator of the mine must obtain a permit to develop and operate a solid waste disposal site on the mine property in compliance with the Solid Waste Rules and Regulations of the IEPA.

Case III: If the ash and sludge wastes are generated on Coalcon's property and are transported to a remote Coalcon owned and operated site (strip mine) for disposal, then Coalcon must obtain a permit from the IEPA to develop and operate a solid waste disposal site.

The estimated costs for these three cases are shown in Table 1.1.7.

Table 1.1.7

Estimated Costs of Solid Waste Disposal

Demonstration Plant	Case I	Case II	Case III
Land Cost (35 acres)	NA*	NA*	$17,500.00
Permit related costs: (in house)	NA*	$5,000.00	$ 5,000.00
Site Development—(facilities, fencing, grading/drainage)	NA*	NA*	$40,700.00
*NA=included in mining operations			
One Time Costs=	Nominal	$5,000.00	$63,200.00
At-plant waste handling costs	$1.00/ton	$1.00/ton	$1.00/ton
Waste hauling costs (10 miles)	—	$0.80/ton	$1.60/ton
Disposal costs at site	$2.25/ton	$2.25/ton	$2.25/ton
Continuing Costs=	$3.25/ton	$4.05/ton	$4.85/ton

1.2 WATER

1.2.1 Quantity

Water will be taken from the Kaskaskia River, which is immediately adjacent to the proposed site area. Direct access to the river is available because the State of Illinois owns the land on both sides of the river (See Figures 2a, b and c).

The Kaskaskia River system includes Carlyle Reservoir and Lake Shelbyville, plus Shoal Creek and Silver Creek below the Carlyle Reservoir. With the exception of a short section at New Athens, the Kaskaskia River has been dredged for navigation from the Mississippi River to Fayetteville. The project is scheduled for completion in 1978.

The Carlyle and Shelbyville Reservoirs contain storage to supplement low flows for navigation, water quality, fish and wildlife, and water supply. An agreement between the State of Illinois and the U.S. Army Corp of Engineers apportions the water in those two reservoirs between the two parties. Minimum low flow releases for fish and wildlife and water quality will never be less than 32 mgd. Additional withdrawals for navigational requirements and consumptive use (limited to the State's allocation) would be made as needed.

1. Raw Materials and Resources

The safe yield for a 100-year drought event is conservatively estimated to be 40 mgd from Illinois' allocated storage. This would adequately supply the demonstration plant requirements of 4.3 mgd. Projected commitments through the year 2010 amount to only 20 mgd, leaving 20 mgd to supply the 21 mgd required consumption of the commercial plant. Thus, in the case of a 100-year drought, there would be a deficit of perhaps 1 mgd for consumptive use. For 25 to 50-year drought events, the safe yield is approximately three times greater and the required consumptive needs could easily be met.

The foregoing discussion is based upon only the drawdown of the State's allotted storage in the two reservoirs. In actuality, additional water is available. The State's agreement with the Federal government gives the State the right to all surplus flow exceeding Federal requirements to replenish storage or satisfy navigational needs plus any inflows below Carlyle Dam (Silver Creek and Shoal Creek). A Corps of Engineers analysis of withdrawal rates, based on stream flows of record and assuming both the reservoirs and the navigation pool had been in operation, indicated the possibility of a mean daily withdrawal of 65 mgd below Carlyle for consumptive use. During the period of analysis from 1930 to 1965, there were no years in which one or both reservoirs were unable to provide 65 mgd in the navigation pool.

In the unlikely event that the plant has additional water requirements, water could be pumped to the site from the Mississippi River, utilizing the navigation channel as a conduit. Pumping costs would be minimal because the maximum lift is only 23 feet at the navigation locks and pumping would be required a relatively small fraction of the year.

Table 1.2.1 lists the lowest flow rates of record at the New Athens gaging station prior to construction of Carlyle Reservoir.

Table 1.2.1

Kaskaskia River Low Flow Rates at New Athens Prior To Carlyle Reservoir (27 years of data)

Period	Low Flow Rate mgd
1 day	22.6
30 day	34.8
7 day—10 year	40.3
7 day—20 year	33.7
30 day—10 year	53.8
30 day—20 year	43.9

During the last 10 years, which includes the effects of Carlyle and Shelbyville, the 7 day—10 year low flow rate at New Athens was 60 mgd.

1.2.2 Water Quality

General water quality in the proposed site area is excellent, being typical of a downstream reach in a basin where land is sparsely populated and land use is primarily agricultural (clay loam prairie and brown forest type soils of low to moderate relief) with very little urbanization and industrialization.

A summary of recent water quality data from two routine sampling stations on the Kaskaskia River is presented in Table 1.2.2.

1. Raw Materials and Resources

Table 1.2.2

Kaskaskia River Water Quality Data
(1972, 1973, 1974)

	State Φ-03 Rt. 13 bridge at New Athens Drainage area approx. 5220 sq. mi.				Station Φ-20 Rt. 160-177 Bridge 5 mi. WNW of Okawville (approx. 10 mi. upstream of Fayetteville). Drainage area approx. 4,366 sq. mi.		
Parameter	Units	Average	Range	No. of Analyses	Average	Range	No. of Analyses
Temperature	°F	58.2	34-81	33	57.	32-79	35
Total dissolved solids	mg/l.	261.	78-460	33	281.	73-800	34
pH	units	7.7	7.3-8.2	34	7.8	7.0-8.2	35
Dissolved Oxygen	mg/l.	8.4	3.0-13.2	33	9.0	2.0-14.7	34
Fecal Coliform*	per 100ml	364.	10-2500	33	1266.	10-8900	33
Phosphorus (total)	mg/l.	0.24	.02-1.2	34	0.24	0.04-0.72	35
Ammonia-N	mg/l.	0.18	N.D.-0.5	34	0.2	N.D.-0.8	33
Nitrate-Nitrate-N	mg/l.	0.93	N.D.-3.2	34	0.9	N.D.-3.7	35
Chloride	mg/l.	24.	8-33	12	27.	15-39	10
Fluoride	mg/l.	0.3	0.2-0.9	11	0.25	0.2-0.5	10
Sulfate	mg/l.	71.	42-150	12	49.	20-80	10
Iron	mg/l.	2.7	0.7-12	13	3.3	0.6-10.0	10
Boron	mg/l.	0.1	N.D.-0.2	9	0.1	N.D.-0.2	8
Manganese	mg/l.	0.42	0.8-1.4	13	0.42	0.08-1.4	10
Phenol	mg/l.	0.005	N.D.-.020	23	0.006	N.D.-0.015	23

*station Φ-03—one analysis result of 26,000/100ml not used to calculate arithmetic average
Φ-20—one analysis result of 34,000/100ml not used to calculate arithmetic average

Heavy metals analyses for mercury, arsenic, cadmium, chromium, copper, lead, nickel, silver and zinc at these two stations have shown insignificant or non-detectable levels.

Historical variability of water quality parameters at New Athens is shown in Figure 1.2.1 for the ten year period 1957 to 1966. Annual temperature variations are shown in Figure 1.2.2.

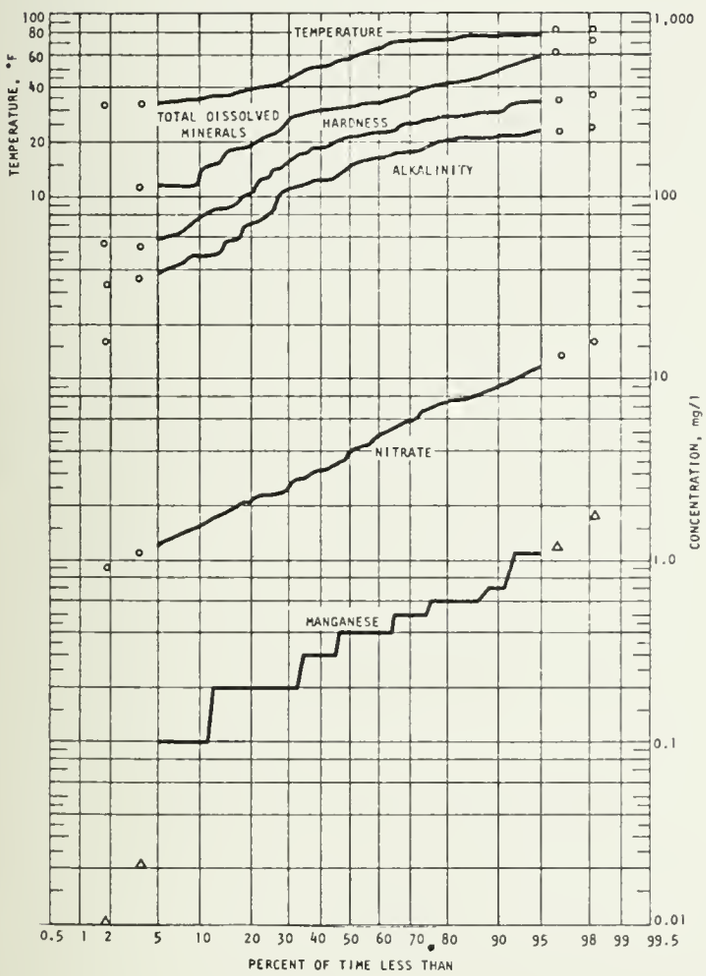
Organic contaminants are not considered important in this area of the Kaskaskia. Fish flesh analyses from the Shelbyville area of this basin indicated no abnormal concentrations of organic chemicals and no fish flesh tainting problems have been reported. Organics present are of natural origin with occasional trace amounts of agricultural pesticides.

Quality variation due to spills of oil and other hazardous materials is not of significance in this reach. Occasional spills occur in the basin from truck, train, or oil transport lines, but these are generally quickly detected and contained.

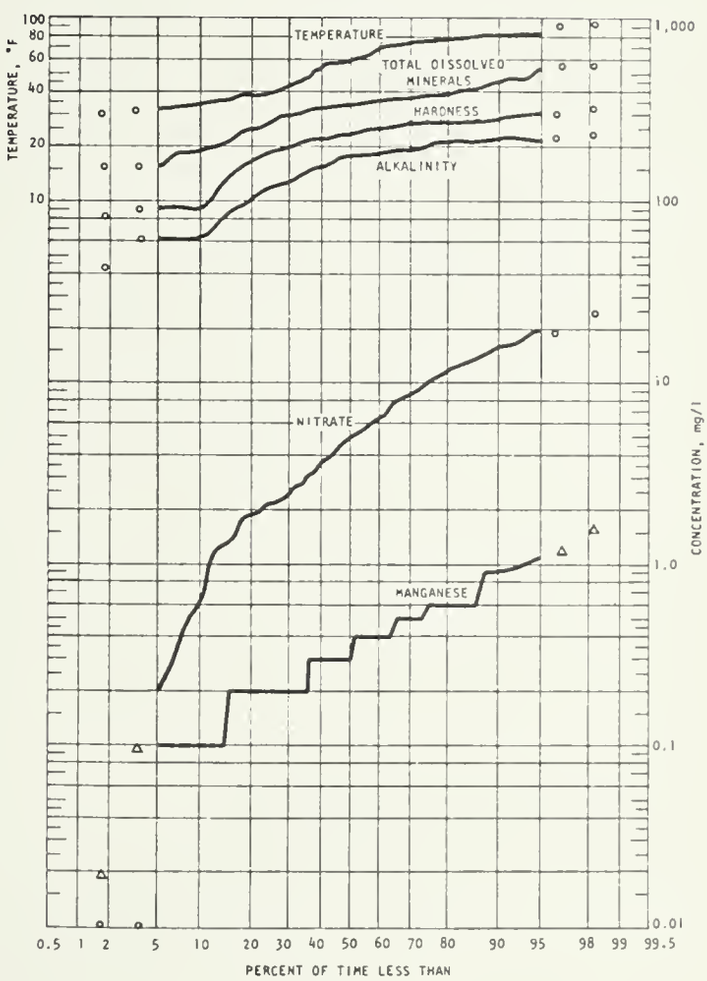
Due to the size of the drainage basin upstream from New Athens, substantial water quality variation in the New Athens-Fayetteville reach over short periods of time is unlikely.

1. Raw Materials and Resources

YEARS 1957-1961

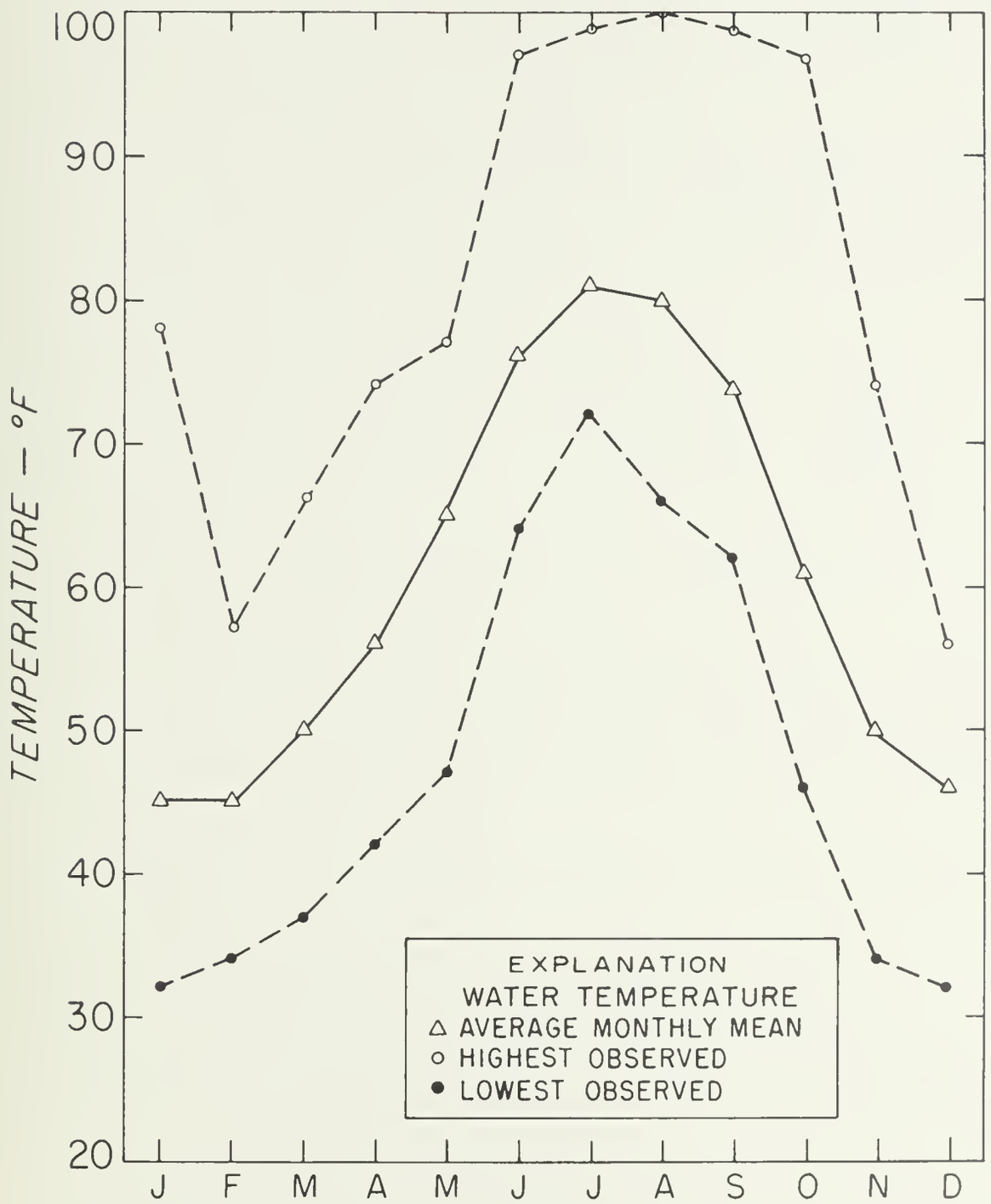


YEARS 1961-1966



Variability of Water Quality Parameters at New Athens—1957 to 1966

Fig. 1.2.1



Data on Water Temperatures of the Kaskaskia River at Carlyle

Fig. 1.2.2

1. Raw Materials and Resources

1.2.3 Limitations on Water Use

Major Pollutants and Sources—Upstream municipal and industrial wastewater contributions to flow at the New Athens area are of minor significance. At average flow, upstream wastewater discharges account for approximately 0.3 to 0.5 percent of the total flow and at the 7 day—10 year low flow, upstream discharges account for approximately 4-8% of total flow. Information on silt load is not available at this time, but may be estimated as moderate, typical of any midwestern prairie stream draining predominantly agricultural land.

The largest municipal plant at Champaign-Urbana is approximately 200 miles upstream on the basin headwaters. This Sanitary District facility has a design flow of 3.1 cfs or about 2.0 mgd. The largest industry in the basin is U.S. Industrial Chemicals Company at Tuscola, about 175 miles upstream on the basin headwaters. Their discharge is about 1.0 to 1.3 mgd.

Ratings Vs EPA Limits—Three parameters show violations with present water quality standards as follows:

	Measurement	Standard
Iron (total)	2.7 mg/l. (avg)	1.0 mg/l.
Fecal Coliform	364/100 ml (avg)	200/100 ml.
Dissolved Oxygen	to 2.0 mg/l. (low)	5.0 mg/l.

Violations of iron and fecal coliform are considered to be a result of non-point source pollution and natural causes. The low value for dissolved oxygen is believed to be a non-representative sample.

Limitations on Water Use—As discussed in Section 1.2.1, water use is limited by the amount allocated to the State from the Carlyle and Shelbyville reservoirs plus the surface waters draining to the Kaskaskia below the Carlyle dam. Water availability analyses, historic records and consideration of future requirements indicate an adequate supply of water for the proposed commercial plant. (See discussion in Section 1.2.1.)

Limitations on Effluent Contaminants—Effluent limitations for process water and sanitary discharges are contained in the Illinois Pollution Control Board Rules and Regulations, Chapter 3, Part IV.

Because the State effluent standards are based upon concentrations achievable with conventional treatment technology that is largely unaffected by ordinary levels of contaminants in the intake water, they are absolute standards that must be met without subtracting background concentrations. However, it is not the intent of these regulations to require users to clean up contamination caused essentially by upstream sources or to require treatment when only traces of contaminants are added to the background. Compliance with the numerical effluent standards is therefore not required when effluent concentration violations result entirely from effluent contamination, evaporation, and/or the incidental addition of traces of materials not utilized or produced in the activity that is the source of the waste.

In addition to the effluent standards contained in the Pollution Control Board Rules and Regulations, a discharge cannot cause a violation of any Water Quality Standard after mixing with the receiving waters.

1. Raw Materials and Resources

If the process water use in the commercial plant concentrates materials contained in the intake water, the two constituents which may present a water quality problem are iron and total dissolved solids. The effluent standard for total dissolved solids would probably be 3500 mg/l assuming that pollution abatement practices are employed at the plant. However, the water quality standard for total dissolved solids, after mixing with the receiving stream, is 1000 mg/l. The ability to meet this standard during low river flow conditions should be evaluated once the commercial plant operating parameters are known.

Mixing zones for discharges to waters of the State shall not exceed the area of a circle with a radius of 600 feet.

With respect to temperature, there generally shall be no abnormal temperature changes that may adversely affect aquatic life unless caused by natural conditions. The maximum temperature rise above natural temperatures shall not exceed 5°F. In addition, the temperature outside the mixing zone shall not exceed a maximum 60°F. during December through March and 90°F. during April through October during more than one percent of the hours in any 12 month period. The water temperature shall not exceed the maximums by more than 3°F. at any time.

Any discharge from a coal preparation (sizing and washing) plant is considered to be process water and falls under Chapter 3 of the Pollution Control Board and Regulations.

Discharge Permits Required—A construction permit is required from the IEPA prior to the start of construction on any water pollution control, sewage collection, or treatment facility. Applications for this permit shall contain detailed plans and specifications of the proposed facility. Applications and the necessary supporting documents should be submitted in a minimum of 90 days before the proposed construction is to begin.

1.2.4 Costs

At the present time the State of Illinois is formulating a water permit policy. It is anticipated that such a system will be in effect prior to the demonstration plant start-up. It is further anticipated that a user charge will be levied. It will not be the intent of the State that initial customers would be required to pay the full cost incurred by the State in making such water available. Thus, a reasonable rate will be assessed. Our best present estimate of costs approximate one cent per thousand gallons.

The State, however, will absorb the cost of any water fees for the demonstration phase of the Coalcon project. Should the anticipated rate of one cent per 1000 gallons hold true, the expected costs for a commercial plant, based on 20.9 mgd consumptive use would be approximately $76,000/yr.

1.3 POWER

1.3.1 Supplier

Electricity to the proposed plant site would be provided by Illinois Power Company (IP). Illinois Power has an excellent performance record and has the available capacity to meet the needs of a coal conversion facility. Financially, the company is in excellent condition. Illinois Power stock is currently selling above book value and their bond rating is AA. Serving all or part of 16 counties in southwestern Illinois and all or part of 14 counties in central Illinois, IP has projected system reserves in excess of the 15% recommended by the Federal Power Commission. IP has a 138 kv connection within 1 mile of the proposed plant site.

1. Raw Materials and Resources

1.3.2 Service: Table 1.3.1. Summarizes Illinois Power's reserve capacity and interruptible service.

Table 1.3.1

Illinois Power Reserve Capacity

Reserve Capacity (Minimum)	**1975**	**1978**	**1981**
MW	962	873	1,218
% of total capability	34%	22%	25%
Interruptible	**1975**	**1978**	**1981**
MW	50	50	50
% of total capability	2%	1%	1%

Recent Performance Problems—Illinois Power Company has experienced no significant difficulties in meeting the electrical energy requirements of its customers during the last 5 years, and as such has not needed to schedule voltage reductions or solicit voluntary load sheddings.

Table 1.3.2. Summarizes the fuel usage mix of Illinois Power.

Table 1.3.2.

Fuel Usage Mix

Fuel Used to Generate	**1975**	**1978**	**1981**
Coal	2,962 MW	3,362 MW	3,362 MW
#6 Oil	230	230	230
#2 Oil	186	186	186
Nuclear	0	0	1,000
Hydro	2	2	2

1.3.3 Costs: One of two rates offered by Illinois Power Company may be used for this application, Service Classification 21 or Service Classification 24. The most beneficial rate to the customer depends upon the quantity of electricy used and the load factor. Both rate schedules are listed in Table 1.3.3. so that all terms and conditions which apply may be considered. Charges to the customer will be determined by the appropriate sections of the applicable classification.

1. Raw Materials and Resources

Table 1.3.3.

Electric Power Rates

Connection (Power to Site)

There is no charge to customer. However, a written contract which guarantees a minimum usage may be required by the utility.

Service Classification 21

Use Charge

Kilowatt-hours (KWH) used in any one month	**Net Charges**
For the first 25,000 KWH	1.67¢ per KWH
For the next 95,000 KWH	1.26¢ per KWH
For the next 420,000 KWH	1.24¢ per KWH
For the next 540,000 KWH	1.22¢ per KWH
For all usage in excess of 300 KWH/KW and 150,000 KWH	1.07¢ per KWH

Demand Charge

Kilowatt (KW) of billing demand in any one month	**Net Charges**
For the first 50 KW	$4.50 per KW
For the next 450 KW	2.90 per KW
For the next 500 KW	2.50 per KW
For the next 4,000 KW	2.15 per KW
For the next 5,000 KW	1.80 per KW

Service Classification 24

Use Charge

The demand (capacity reservation) charge shall include payment for the first 4,200 KWH per KW of reserved capacity. For all energy delivered during any 12 month period in excess of the above shall be at a rate of 0.84¢ per KWH.

Demand Charge

Kilowatt (KW) of billing demand in any one year	**Net Charges**
For the first 3,000 KW or less	$240,600.00
For the next 7,000 KW	67.80 per KW
For all over 10,000 KW	59.88 KW

1.3.4 Proximity: Voltage at the nearest connection point, New Athens, is 138 kv. The distance to this connection is less than one mile.

1. Raw Materials and Resources

1.4 Contract Services

The proposed site at New Athens which is adjacent to the St. Louis Metropolitan Area offers distinct advantages with regard to contract services. Table 1.4.1. lists the number of firms offering contract services within 30 miles.

Table 1.4.1
NUMBER OF FIRMS PROVIDING CONTRACT SERVICES, BY COUNTY
ST. LOUIS METROPOLITAN AREA

MACHINE SHOPS
Madison County—22
Monroe County—3
St. Clair County—17
St. Louis City & County—203

EQUIPMENT REPAIR
Boiler Repairing
Madison County—7
Monroe County—0
St. Clair County—2
St. Louis City & County—69
Electronic Equipment
Madison County—1
Monroe County—1
St. Clair County—1
St. Louis City & County—13
Electric Motor
Madison County—7
Monroe County—2
St. Clair County—6
St. Louis City & County—33

ELECTRICAL/ELECTRONIC SUPPLIES
St. Louis City & County—21

PIPEFITTING & FABRICATING
Madison County—6
Monroe County—2
St. Clair County—7
St. Louis City & County—31

SHEET METAL WORK
Madison County—27
Monroe County—1
St. Clair County—17
St. Louis City & County—83

STEEL FABRICATORS
Madison County—6
Monroe County—0
St. Clair County—1
St. Louis City & County—86

GRAPHICS
St. Louis City & County—13

CAFETERIA SERVICE
Madison County—1
St. Louis City & County—4

JANITORIAL SERVICES
Madison County—12
Monroe County—0
St. Clair County—15
St. Louis City & County—84

REFUSE COLLECTION
Madison County—14
Monroe County—1
St. Clair County—15
St. Louis City & County—79

GENERAL CONTRACTORS
Madison County—166
Monroe County—21
St. Clair County—62
St. Louis City & County—393

SUPPLY VENDORS
Industrial Equipment
Madison County—4
Monroe County—2
St. Clair County—6
St. Louis City & County—48
Hydraulic Equipment
Madison County—1
St. Louis City & County—35
Welding Equipment
Madison County—6
Monroe County—0
St. Clair County—8
St. Louis City & County—37

SEWAGE DISPOSAL SYSTEMS
Madison County—1
Monroe County—0
St. Clair County—1
St. Louis City & County—6

SECURITY SERVICE
Madison County—3
Monroe County—0
St. Clair County—5
St. Louis City & County—56

1. Raw Materials and Resources

1.5 Communications

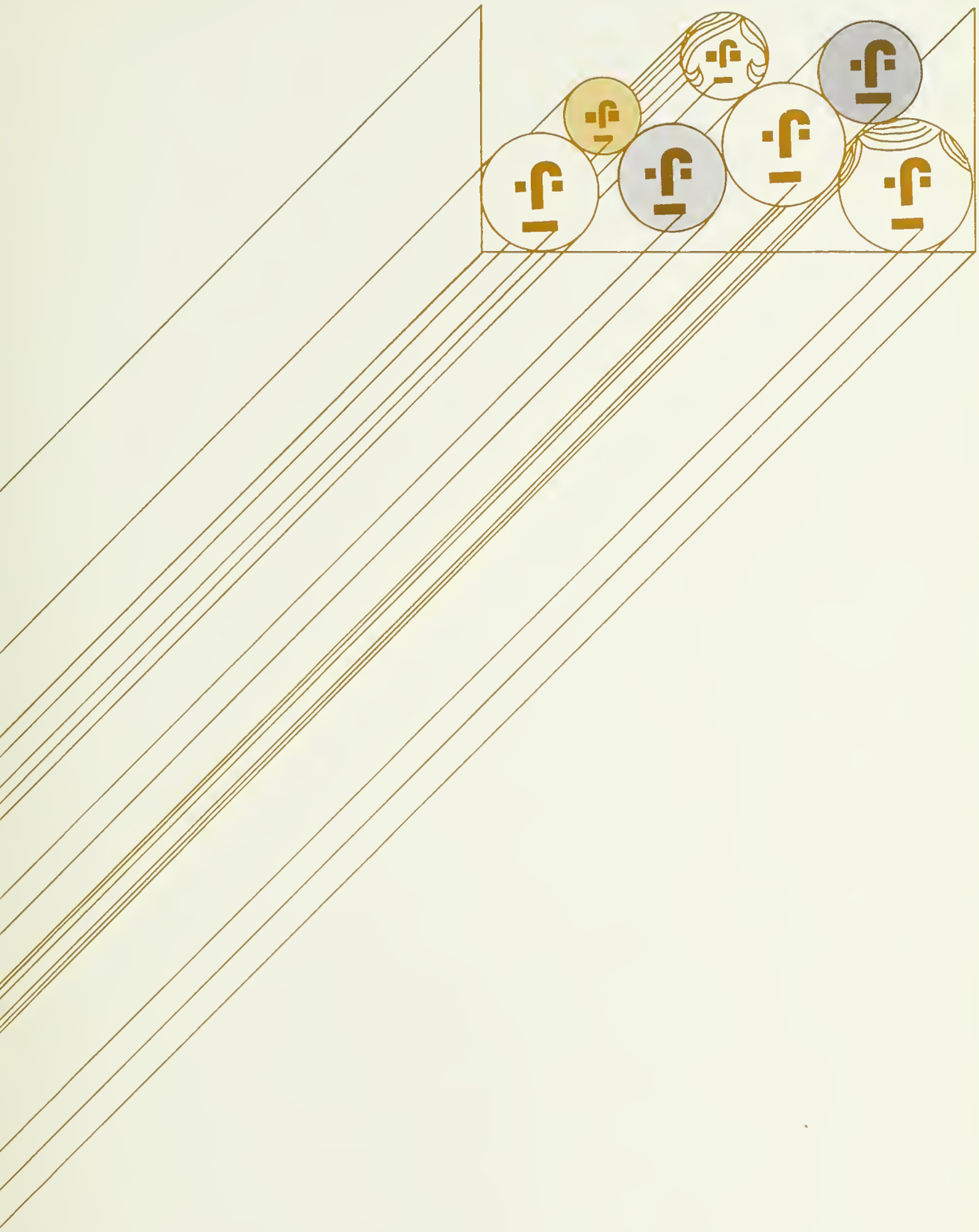
The proposed plant site is located within the New Athens Exchange of Illinois Bell Telephone Company. The exchange was formerly owned by Southwestern Bell Telephone Company and was acquired by Illinois Bell Telephone Company on January 1, 1975. The telephone communications services for New Athens are provided by a dial switching system type 355 step-by-step with 1200 lines installed. The building, however, has a capacity of 3600 lines and thus, the capacity of the dial switching equipment can be tripled with the present office.

The toll center for New Athens is presently Belleville, Illinois, which is some 15 miles to the northwest. However, the Belleville office will be moved to Collinsville. Thus, in October, 1975, the New Athens Exchange will be toll centered directly to a new 4a toll switching machine at Collinsville, Illinois. Illinois Bell and AT&T are spending several million dollars in installing this new 4a electronic toll switching office in Collinsville which will serve the greater East St. Louis area and approximately one half of the southern portion of the State of Illinois.

The local exchange rates for the New Athens Exchange are as follows: Urban business one-party is $10.00, residence one-party is $4.00, residence two-party is $3.50, rural business four-party is $6.15 and rural residence four-party is $4.00.

Illinois Bell is able to provide any type of PBX dial switchboard or any type of key system on a very short notice, since these units can be obtained from Western Electric in Cicero, Illinois. Thus, any new special services required in the New Athens Exchange can be ready as soon as required.

2. Labor



2.

2. Labor

2.1 Construction Labor

The construction labor requirement for the project can be met as demonstrated by Table 2.1.1. More than 5,700 construction workers are within 30 miles of the proposed site. Union representation, wage rights, and unemployment levels for those trades which would serve the site are also contained in Table 2.1.1. Unemployment among construction workers averaged 27% during 1974 in the St. Louis Metropolitan Area with the largest number occurring from December through April.

Pre-job Conferences between the various construction trades and contractors are now a routine practice in the area. These conferences serve to minimize jurisdictional disputes and expedite the project. In addition, Union representatives have expressed a willingness to discuss the feasibility of a "no-strike" contract for the length of the project, thus assuring no delays due to work stoppages.

Only two major construction projects are currently underway in St. Clair County. A $30-40 million shopping center at Fairview Heights is due to be completed by 1977 and a multi-million dollar expansion of the Monsanto facilities at Sauget will be completed in the near future.

Minority representation among the construction trades averages 3.1% while comprising 17% of the total metropolitan labor force. A recent Consent decree requires 20% minority employment on construction projects whenever possible. Many trade unions have instituted training programs in order to comply.

2.2 Operating Personnel
2.2.1 Skills and Number Available

Operating personnel for the project are also available in the St. Louis Metropolitan Area. Of the total labor force of 1,006,000 more than 21,000 are employed in chemical and allied industries.

2. Labor

Table 2.1.1

Construction Labor

Union Local	Member-ship	Unem-ployed	Unem-ployed	Contract Expiration Date	Wage	Fringe	Total	Contract Effective Date
Carpenters #997	900	27%	243	7/31/77	$ 9.535	$1.32	$10.855	8/1/74
					10.23	1.32	11.55	8/1/75
					10.885	1.32	12.205	8/1/76
Electricians #309	400	25%	100	9/1/76	9.38	1.72	11.10	9/1/74
					10.38	1.72	12.10	9/1/75
Ironworkers #392	400	40%	160	7/31/77	9.55	1.12	10.68	8/1/74
					10.30	1.32	11.62	8/1/75
					11.00	1.32	12.32	6/1/76
Laborers	1600	50%	800	7/31/77	8.20	.62	8.82	8/1/74
					9.20*	.62	9.82	8/1/75
Operating Eng. #520	1000	60%	600	7/16/77	9.63	1.32	10.95	1/1/75
					10.33	1.32	11.65	7/17/75
					11.08	1.32	12.40	7/17/76
Plumbers-Pipefitters #101	150	20%	30	7/31/75	9.41	1.29	10.70	8/1/74
Plumbers-Pipefitters #360	625	20%	125	6/30/75	11.00	1.25	12.25	7/1/74
Plumbers-Gasfitters #553	200	20%	40	12/1/76	9.50	1.02	10.52	1/1/75
					10.25	1.20	11.45	1/1/76
Steamfitters #439	250	20%	50	12/1/76	9.50	1.02	10.52	1/1/75
					10.25	1.20	11.45	1/1/76

*Increase may be taken as either wage or fringe.

2. Labor

2.2.2 Unemployment Rate, Trends, Seasonal Factors

The current Business Labor Statistic classification for the St. Louis Missouri—Illinois region is "substantial" but not "persistent" unemployment, Ranging from 6.0%-8.9%. A seasonal factor affecting unemployment is the automotive industry model change.

2.2.3 Competition—Existing and Projected Major Employers

There are five major employers (over 500 employees) in the area which might be viewed as competition for labor. They are Monsanto Company, Olin Corporation, Laclede Gas Company, Shell Oil Co. (refinery), and American Oil Company (refinery). The presence of these major petrochemical industries could, in fact, prove to be an asset in that a large pool of skilled labor is created.

2.2.4 Wage Rates, Employee Benefits (1974)

Wage rates for Operating and Maintenance Personnel are contained in Table 2.2.1. Of the 105 firms surveyed in the St. Louis area, 74% offer ten or fewer holidays to their hourly employees. Cost of living increases were provided by 18% of the firms with 31% offering supplemental workmen's compensation. One week of vacation was given after one year of service by 89% of the survey sample.

Average weekly earnings for the Petroleum and Coal Product Industries were $287.22 in February, 1975, compared with $287.27 during February, 1974. The average hours worked per week for the same period were 42.3 and 49.7 respectively.

2.2.5 Union Climate

Being located in an old, established urban area, many manufacturers have had union affiliations within their facilities for some time. During 1972 (the latest figures available) there were 81 work stoppages involving 51,400 workers. These figures represented a total of 626,900 man days lost. Although numerically these statistics seem high, they indicate only 0.21% of time lost.

2. Labor

Table 2.2.1

Operating Personnel Wage Rates (1974)

Category	Hourly Average
Maintenance	
Carpenter	$5.28
Electrician	5.97
Engineer, Power Plant	5.75
Helper, Maintenance Trades	4.57
Machinist, Maintenance	6.04
Mechanic (Auto) Maintenance	5.79
Millwright	5.32
Painter	5.39
Plumber	5.51
Manufacturing—Production & Inspection	
Assembler	4.15
Assembler "A"	4.91
Bench Machine Operator	3.92
Crane Operator	5.46
Engine Lathe Operator	5.09
Inspector, Assemblies	4.81
Inspector, Machine Parts	5.19
Machinist, Journeyman	4.73
Machine Tender	6.15
Milling Machine Operator	5.07
Process Equipment Operator	4.61
Miscellaneous	
Draftsman "A"	6.10
Draftsman "B"	5.04
Draftsman "C"	4.28
Janitor	4.24
Laborer, Material Handling	4.10
Lift Truck Operator	4.39
Shipping Clerk	4.26
Tool Crib Attendant	4.81
Truckdriver, Local	5.30
Watchman or Guard	4.82

2. Labor

Table 2.2.1 (continued)

Operating Personnel Wage Rates (1974)

Category	Minimum	Maximum	Monthly Average
Office & Clerical			
Accountant, Jr.	$ 673	$ 899	$ 791
Bookkeeper, Gen.	598	815	621
Bookkeeping Machine Operator	582	758	728
Calculator Machine Operator	492	655	535
Clerk, Beginner	447	591	492
Clerk, Senior	486	670	580
Clerk-Typist	513	672	634
Correspondent			682
Nurse, Industrial (Reg.)	758	986	898
Receptionist	547	730	580
Receptionist-Switch Board Opr.	485	638	562
Secretary I	620	850	752
Secretary II	588	775	676
Stenographer	533	715	687
Secretary-Stenographer	594	777	689
Switch Board Operator	592	773	722
Typist	531	698	669
Data Processing			
Systems Analyst	965	1395	1155
Programmer, Business	860	1259	1061
Programmer, Business	728	1023	907
Digital Computer Operator	673	918	816
Key Punch Operator	524	688	632
Key Punch Operator	453	601	587
Supervisory			
Supervisor, Machine Shop	986	1446	1244
Supervisor, Maintenance	1000	1419	1224
Supervisor, Assembly	877	1255	1147
Engineering & Technical			
Chemical Engineer	996	1673	1265
Electrical Engineer	1021	1571	1175
Civil Engineer	1002	1514	1225
Industrial Engineer	871	1365	1153
Mechanical Engineer	1002	1522	1233
Analytical Control Lab Technician	793	1133	863

2. Labor

Union organizational efforts have been relatively non-militant. In 1974, there were 44 National Labor Relations Board elections in Southern Illinois. These elections resulted in the organization of 22 firms. Of those firms organized, nine were by Teamsters, eight were by Retail Clerks, and one by the United Auto Workers. The remainder were organized by various local unions.

2.2.6 Trade Schools

There are 23 industrial and technical trade schools in the metropolitan area. Two of the largest are Bailey Technical School and Ranken Technical Institute. Their enrollments are approximately 800 and 1,300 respectively. In addition, there is a wide range of subjects offered by the area's four major universities, 16 colleges and four junior colleges.

Lincoln Trail Community College in Robinson, Illinois offers an Associate Degree of Applied Science in Petroleum Technology. Students from the area may enroll in this program through a reciprocal tuition agreement.

2.2.7 Labor Relations Climate

Labor relations in the metro area are good. This is reflected in the fact that only 0.21% of time was lost from 1971-73 (the latest figures available). There were 1.2 separations per 100 employees during January, 1975, in the petroleum and coal product industries.

No current statistics are available on operating labor productivity. The State will assemble such data should Coalcon deem it necessary.

2.2.8 Equal Employment Opportunity Considerations

The Equal Employment Opportunity Act requires an Affirmative Action Program to be initiated. Table 2.2.2 summarizes the manpower data necessary to institute such a program. Assistance is available from the local offices of both the Missouri and Illinois Divisions of Employment Security.

2. Labor

Table 2.2.2
Manpower Information for Affirmative Action Programs
(St. Louis SMSA)

	STANDARD METROPOLITAN STATISTICAL AREA
Total Population—1970 Census	2,410,163
Total Minority Population—1970 Census	409,823
Percentage of Minority Population	17.0%
Total Female Population—1970 Census	1,260,212
Percentage of Female Population	52.3%
The labor force, unemployment, and unemployment rate of the SMSA, of females, and of minorities, determined by place of residence, are as follows:	
SMSA Civilian Labor Force—1974 Average	1,006,115
Unemployment	63,221
Unemployment Rate	6.3%
SMSA Female Labor Force—1974 Average	392,979—39.1% of Labor Force
Unemployment	27,817
Unemployment Rate	7.1%
SMSA Minority Labor Force—1974 Average	150,425—15.0% of Labor Force
Unemployment	17,471
Unemployment Rate	11.6%

2.3 Maintenance Personnel

Information pertaining to maintenance personnel is contained within Section 2.2, Operating Personnel.

2.4 Professional Personnel

More than 40,600 professional and technical personnel live in the St. Louis Metropolitan Area. Of that number 17,890 are engineers, 10,262 are engineering and science technicians, and 12,500 are engaged in various specialties.

2.4.1 Availability in Area

An inventory of technical personnel in Metropolitan St. Louis is contained in Table 2.4.1.

Table 2.4.1
Inventory of Technical Personnel in Metropolitan St. Louis

Type of Profession	Working as of 1970	Available for Work June/Sept.—1974
Engineers (Total)	17,890	980
Chemical	1,022	30
Civil	1,920	
Electrical & Electronic	3,897	225
Industrial	2,474	200
Mechanical	2,196	250
Others	6,381	170
Engineering and Science Technicians	10,262	435
Draftsmen	1,911	228
Electrical & Electronic	1,217	—
Industrial & Mechanical	475	—
All Other Technicians	3,659	—

2. Labor

2.4.2 Salary Rates and Benefits

Salary rates for professional personnel are reflected in Table 2.4.2. Fringe Benefits are comparable to those discussed under Section 2.2, Operating Personnel.

Table 2.4.2

Professional Personnel Salary Rates (1974)

	Minimum Salary	Maximum Salary	Ave./Mo. Salary
Chemical Engineer	$ 996	$1,673	$1,265
Electrical Engineer	$1,021	$1,571	$1,175
Civil Engineer	$1,002	$1,514	$1,225
Industrial Engineer	$ 871	$1,365	$1,153
Mechanical Engineer	$1,002	$1,522	$1,233
Analytical Cem. Lab. Tech.	$ 793	$1,133	$ 863

2.4.3 Universities—Colleges

More than 89,000 students are enrolled in the St. Louis area's four major universities, 16 colleges and four junior colleges. St. Louis University, oldest west of the Mississippi (founded 1818), and Washington University (founded 1853) are world famous for their medical schools and research programs; both are distinguished for their Nobel Prize winners. The University of Missouri at St. Louis and Southern Illinois University at Edwardsville are relatively new. Just outside the metro area are two other noted universities: Southern Illinois University at Carbondale, which has a Coal Extraction and Utilization Research Center, and the University of Missouri with an outstanding engineering school at Rolla. Harris Teacher's College, part of the St. Louis Public School System (started in 1850), is one of two such teachers' colleges in the country.

Vocational training is being expanded rapidly at the high school level by the metro area public school districts. The Special School District of St. Louis offers unique educational advantages for handicapped youngsters. The combination of its universities and colleges and its diversified industries makes St. Louis a leading research center.

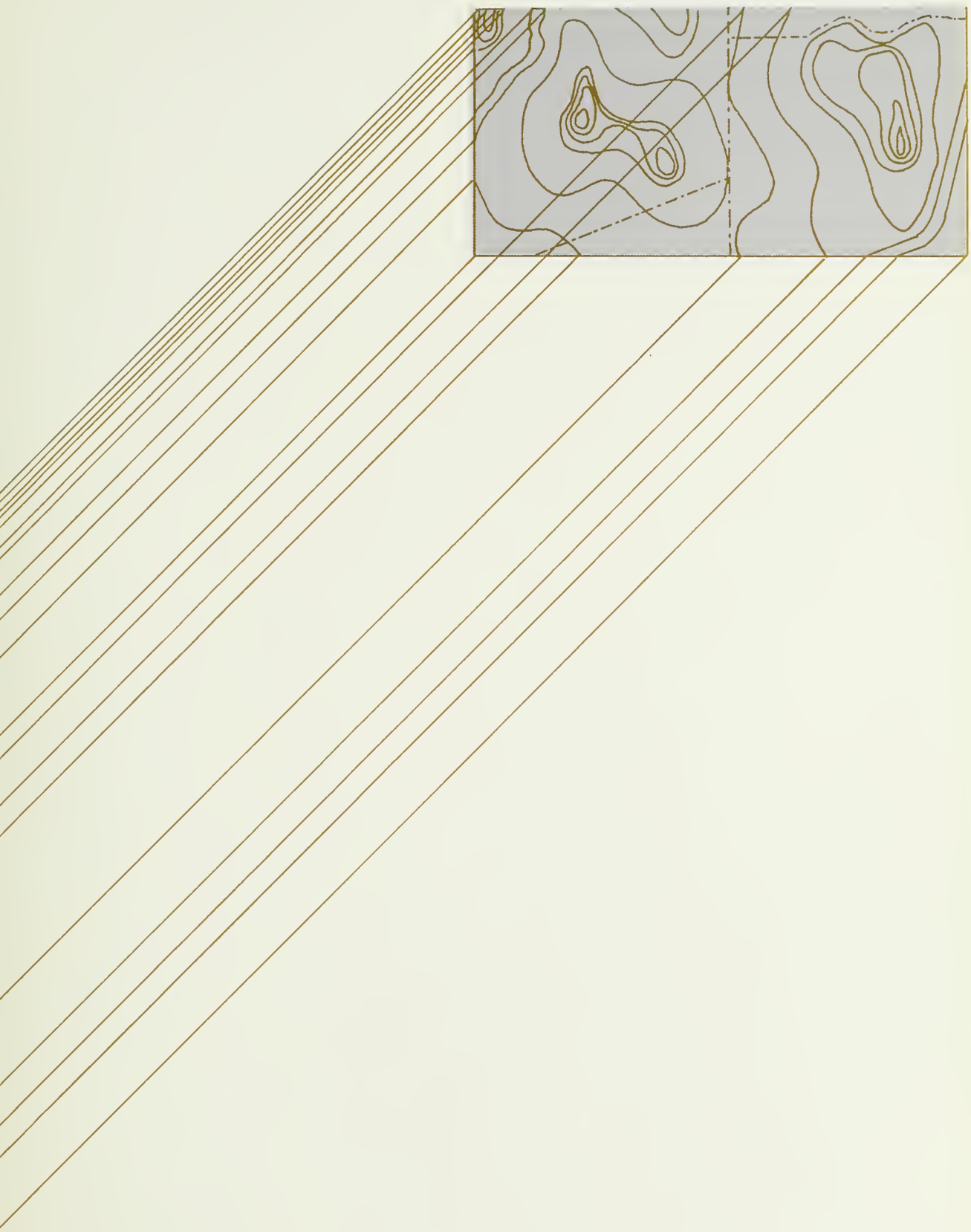
2.4.4 Competition in Area

Major petrochemical employers in the St. Louis Metropolitan area are listed in Section 2.2.3. The diversity of employment opportunities provides an abundant labor pool from which to draw.

2.4.5. Life Style

The St. Louis Metropolitan area provides a great variety of cultural, educational, religious and recreational opportunities. These attractions are described in Section 5.3.

3. Land



3.

3. Land

3.1 Area and Dimensions

The proposed site location between New Athens and Fayetteville, shown in Figures 2a, b and c, contains approximately 2000 acres of land owned by Peabody Coal Company, about one-half of which represents the current and past strip mining activities of River King Mine Pit #3. Another 2200 acres of land which borders the river on both sides is owned by the State of Illinois. (see Figure 3.1.1) Large portions of sections 26, 27 and 28 of New Athens Township have been or are being mined. In sections 24, 25 and 26, Peabody owns vast reserves of coal. It is within sections 23-26 the specific plant site would be most suitably located. A quick study of this site will reveal its potential for the development of a coal conversion facility. The required acreage contains vast reserves of coal and the means for obtaining coal for the facility will be arranged with relative ease. The required amounts of water can be taken from the Kaskaskia River, utilizing the State-owned land as both a buffer and for easily securing the needed frontage for water intake and discharge. The superior transportation facilities need only short distance site connections to realize a well-integrated system of roads, rails and water.

The State land was acquired to expedite the channelization of the Kaskaskia and is now held by the Illinois Department of Transportation, Division of Water Resources. Portions of sections 22, 23 and 24 were given to the State by Peabody Coal Company. They, however, retain the right to strip mine that portion and plan to do so in the next five years.

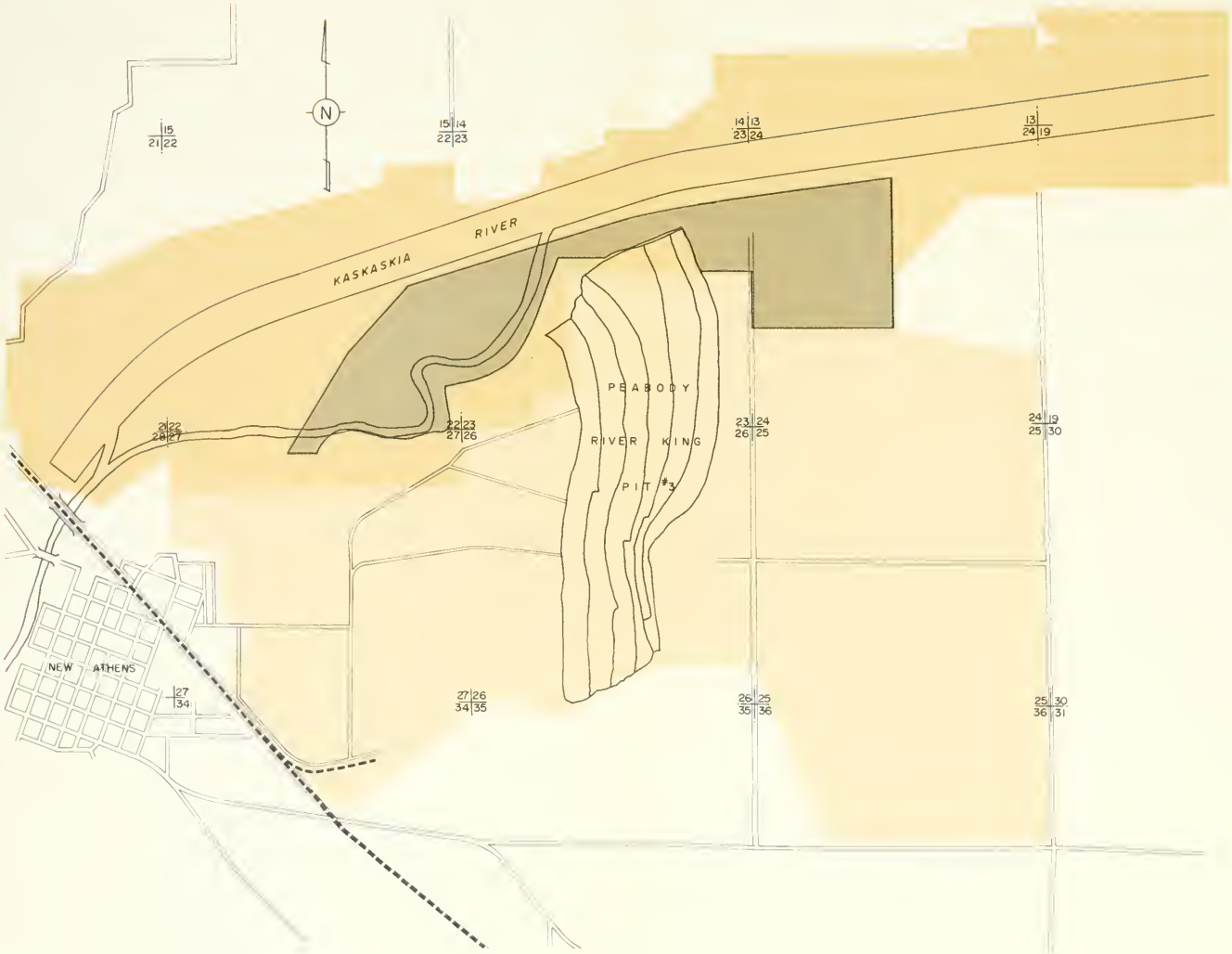
A unique characteristic regarding the proposed site is that much of the land is either reclaimed strip mine land or land scheduled to be stripped. The site therefore has the advantage of being adjacent to supplies of coal needed for the demonstration plant. There are aspects of strip mining that are controversial, including the question of how to utilize reclaimed land. The State of Illinois suggests that, for purposes of this project, reclaimed land be used as part of the proposed site. The environmental, political and public relation aspects of this concept become immediately obvious. Along with these advantages is the fact that reclaimed land is considerably less expensive to acquire and less controversial to utilize than land otherwise in use.

State land will be made available to Coalcon for the purposes of plant construction, rights-of-way, loading/unloading or any other necessary function of the proposed project. A lease arrangement has been discussed which will result in only a minimal cost to Coalcon. While future negotiations will determine the exact arrangements, the following concepts regarding a lease arrangement have been agreed upon in principle:

1. State land will be leased to the Coalcon project on a ten-year basis, with provisions being made for automatic renewal.
2. Coalcon will have the option of leasing only such portions of State land that it requires for the implementation of its project.
3. The cost of the lease will be a nominal amount. The annual cost for the lease will be approximately $10 per foot of waterway frontage and $75 per acre for backland.
4. The lease will not be executed until Coalcon deems necessary, so that payment can be postponed until the project is well underway.
5. Rights-of-way use can begin on State property prior to the actual execution of the lease.
6. The State will not offer any lease arrangement with anyone other than Coalcon until Coalcon indicates that the proposed project will not utilize the State land.

3. Land

Figure 3.1.1
Land Ownership Map



3. Land

State of Illinois and Peabody geologists are exploring the potential of locating the plant directly on reclaimed land. The relatively shallow overburden and the stable limestone formation in the area indicate that utilization of this land for construction of heavy equipment may be feasible. The proposed site is large enough that utilization of the reclaimed land is not necessary for plant construction. However, with the use of State land, reclaimed land and land east of the mine, Coalcon will have considerable lattitude in deciding the optimal location for the plant. Actual arrangements for the use of Peabody land can be affected after Coalcon makes its site location decision. However, the following understandings for utilization of Peabody land have been reached.

1. Peabody Coal Company will keep its land in question available until a site decision is made by Coalcon.

2. Peabody will, after site selection, negotiate an option on that portion of its land which Coalcon desires to utilize for the project.

3. Any option/lease/sale of Peabody land will be made on a reasonable and economically attractive basis.

4. Peabody will consider granting an option on said land until such time as Coalcon actually has a need for such land.

Finally, it should be noted that BED maintains rights of eminent domain which could be used, if necessary, to close out small parcels of land which become unobtainable.

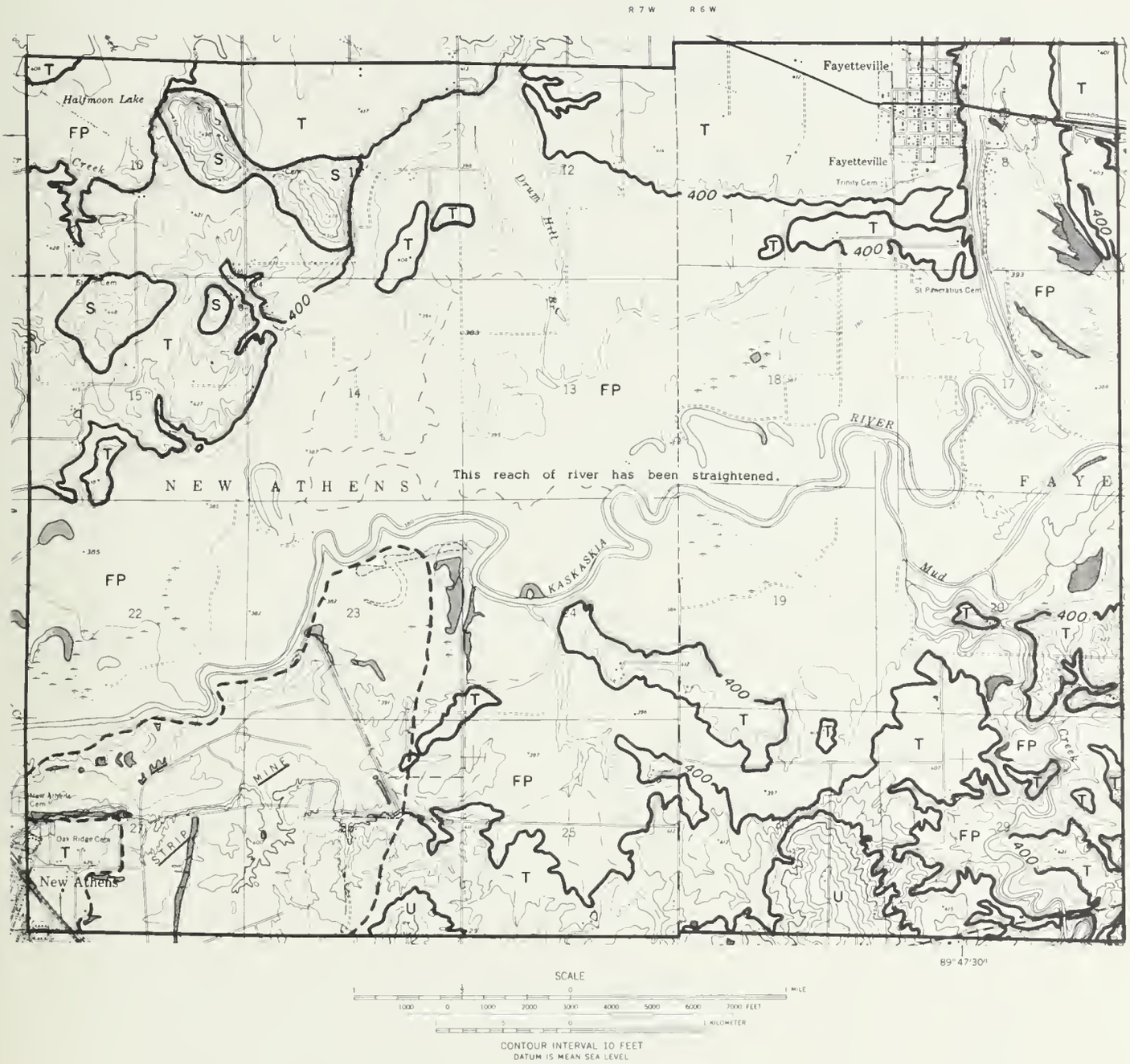
3.2 Topography

The proposed site area is located in the Kaskaskia River valley in southeastern St. Clair County. It includes part of New Athens in the southwest corner and part of Fayetteville in the northeast corner. From about one-half mile south of Fayetteville to New Athens, the Kaskaskia River flows through an alluvial flood plain. The gradient of the river is very low, and the original river followed a meandering course through the site area. In recent years, the river has been straightened by channelization. (See inner cover pocket for topographical map.)

As shown in Figure 3.2.1, the normal river surface is below 380 feet (MSL) across the entire site. The hill in the northeast quarter of section 10 (T 2S, R 7W) reaches an altitude of 498 feet above MSL, and is the highest point in the site area. Total relief in the site area is thus a little more than 118 feet.

The valley of the Kaskaskia River has had a complicated geologic history which has included several episodes of downcutting and valley filling. Five topographic regions in the area are: (**1**) the present flood plain of Kaskaskia River and Silver Creek, (**2**) a system of terraces, (**3**) the sand areas, (**4**) the upland till plain, and (**5**) the strip-mined area.

3. Land



EXPLANATION

ILLINOIS STATE GEOLOGICAL SURVEY

FP	Flood plain
T	Terrace
S	Sand
U	Upland

Topographic regions in New Athens-Fayetteville site area.
Fig. 3.2-1

3. Land

The present flood plain of Kaskaskia River and Silver Creek comprise the entire area that lies between an elevation a little below 380 feet and elevation 400 feet. Within the flood plain and before the river channel was improved, the local relief was generally on the order of 5 to 10 feet, except along Mud Creek in the southeast part of the site area, where it is greater. Normal flood plain features such as cut-off meanders, oxbow lakes, and swamps in poorly drained areas were common, principally in a band near the river. This band probably represents the younger part of the flood plain.

A system of terraces has been recognized in Kaskaskia Valley. These are interpreted as being parts of earlier valley fillings to elevations higher than the present flood plain. The surfaces of these terraces are at elevations between 400 and 430 feet. They are prominently developed on both the north and south sides of the site area, and there are several terrace remanants in the flood plain area completely surrounded by the more recent sediments of the present flood plain.

Along the south side of the site area, in section 30 (T 2S, R 6W) and in section 26 (T 2S, R 7W) are two areas of upland till plain. The one in section 26 rises to an elevation of little higher than 460 feet; the top of the one in section 30 is a little above elevation 490 feet. Both of these represent the northern edge of an extensive loess-covered till plain south of the site area. The terrace sediments lie against and cover the lower slopes of these till plain prominences.

An area more than 2 square miles in extent east and northeast of New Athens has been strip mined for coal. In this area the original topography has been substantially disturbed, as have the underlying sediments.

The U.S. Geological Survey has defined the 100-year "flood prone area" elevation to be approximately 405 feet (MSL) at Fayetteville, and it may be assumed to be approximately the same at New Athens. The flood of record on the New Athens gage is 398.85 feet (MSL), prior to construction of Carlyle Reservoir. Since completion of Carlyle, in 1967, the maximum river gage is 388.58 feet (MSL).

State-owned land between the two towns is almost entirely within the USGS-defined 100-year flood elevation.

3.3 Current Land Use

Portions of the proposed site are currently engaged in land use of one of three types: coal mining, agriculture, or flood plain. The general area of the site is currently zoned agriculture as per the St. Clair County Zoning Ordinance. The land utilized for the conversion facility would require rezoning to I-2, *General Industrial*. Given the favorable public attitude in the county for coal development, rezoning is viewed as only a legal procedure.

3.4 Title, Ownership, Easements

There are relatively few property owners in the site area: the State of Illinois, Peabody Coal Company, and several farmers.

Title to the State property is in fee simple to Illinois. All conveyances were by warranty deed. Certain mineral and timber rights were retained by the grantors.

3. Land

To date, the State has given three easements. One is to the Army Corps of Engineers. It is a right of access to both banks of the river to maintain the Kaskaskia River Channel. Two easements have been granted to Illinois Power Company for the erection and maintenance of electric power lines and for access to maintain such power lines (sections 18 and 19, T 2S, R 6W, and section 22, T 2S, R 7W all in St. Clair County). Certain of the retained mineral rights also have easements to remove such minerals.

Peabody Coal Co. owns title to most of the land in sections 23, 25 and 26. They have also granted an easement to Illinois Power. Their power lines run northwest through the center of Section 27. Approximately 410 acres in Sections 23, 24, 25 and 26 are privately owned and are used for agricultural purposes.

3.4 Land While it has been determined that the optimum site for the location of the hydrocarbonization plant is in the corridor of the Kaskaskia River between New Athens and Fayetteville, the exact property in question has not yet been determined. Information is available as to the status of title, rights-of-way and easements in the corridor surrounding both river banks owned by the State of Illinois. Upon the final determination as to the exact site location, searches of the public records and of Peabody Coal Co. records will enable the State to provide exact site information.

3.5 Cost As mentioned previously, Peabody Coal Company and the State of Illinois own almost the entire area that would be suitable for the plant location. Peabody is intensely interested in advancing the science of coal conversion and has indicated that they will option land to Coalcon for the demonstration of a conversion facility and any requests for acquisition will be met with a reasonable and attractive reply (see section 3.1).

The State of Illinois land will be made available on a ten-year lease with automatic renewal. The annual assessment for Illinois land will be $10 per foot of river frontage and $75 per acre for backlands. For estimating purposes, assume 1000 feet of waterway frontage plus 100 acres of backland would be required for the demonstration plant and 200 acres for the commercial plant. Land rents would then be $17,500 per year for the demonstration phase and $25,000 per year after the facility becomes commercial.

Most of the Illinois land was purchased between 1967 and 1971. Very few of the properties acquired for the Kaskaskia development project were done so through the exercise of the right of eminent domain.

Coalcon's land acquisition or rental costs will ultimately be dependent on what percentage of desired land is owned by Peabody, the State of Illinois or the area farmers. Land will surely be less expensive and more easily attainable at this proposed site because of, 1) the low rental cost of the State land, 2) Peabody Coal Company's interest in the project and their willingness to negotiate an attractive and economical cost and, 3) less than 20% of the land in the proposed site is privately owned.

Three-man-team surveys generally cost approximately $30 per hour. Estimates for the proposed site indicate an approximate cost of $15,000 for 1000 acres of boundry line surveying and new topographic mapping.

3. Land

No assessments would be added to the cost of the land by the State or St. Clair County.

3.6 Surroundings

As mentioned previously, the attractiveness of this site is based on the close availability of all the needed site requirements and the short distance to population centers and transportation accesses.

Specifically, the surroundings offer the following: **1**) Peabody will commit the needed coal for the demonstration phase. River King mine, the project coal source, operates pits 1 and 2 near Freeburg, approximately seven miles from the site, and pit 3 lies adjacent and, in fact, within the proposed site. The River King mine is the most productive strip mine in Illinois, producing close to five million tons annually, **2**) The distance from the proposed site to the water source will probably be less than 5000 feet north. **3**) Population centers in the area include New Athens, population 2,000, 2 miles west, and Fayetteville, population 379, 4 miles northeast. The proposed site lies within St. Clair County, population 285,000. The county lies within the St. Louis Standard Metropolitan Statistical Area (SMSA), population 2,410,000. St. Louis lies thirty miles northwest. Springfield, the State capital, is 130 miles northeast. Other distances: Chicago, 290 miles northeast; Houston, 800 miles southwest; New York, 975 miles east. **4**) The Illinois Central Gulf railroad runs through New Athens, two miles to the west, and the Louisville and Nashville runs 11 miles north of the proposed site. U.S. 460 runs through Fayetteville and Illinois 13 runs through New Athens. Interstate I-64 runs east-west 13 miles north of Fayetteville. **5**) Pipelines abound very close to the proposed site: Illinois Power, one-half mile southwest; Natural Gas Pipeline Company of America, 30.5 miles east; Mississippi River Transmission Corporation, 15 miles west; Williams Brothers, 8 miles northwest; Phillips Pipeline Company, 19 miles northwest. Barges to the area will be as close as the water supply, less than 5,000 feet north. **6**) Current land use is strip mining east of New Athens and agricultural east of the strip mining operation. **7**) Immediate neighbors again reflect land use: Peabody Coal Company is strip mining in sections 27 and 26. The rest of the land is agricultural or State of Illinois land which borders the Kaskaskia river. There are approximately 17 dwelling units in sections 23, 24, 25, 26 and 27. All except four sit on land owned by Peabody Coal Company.

3.7 Zoning

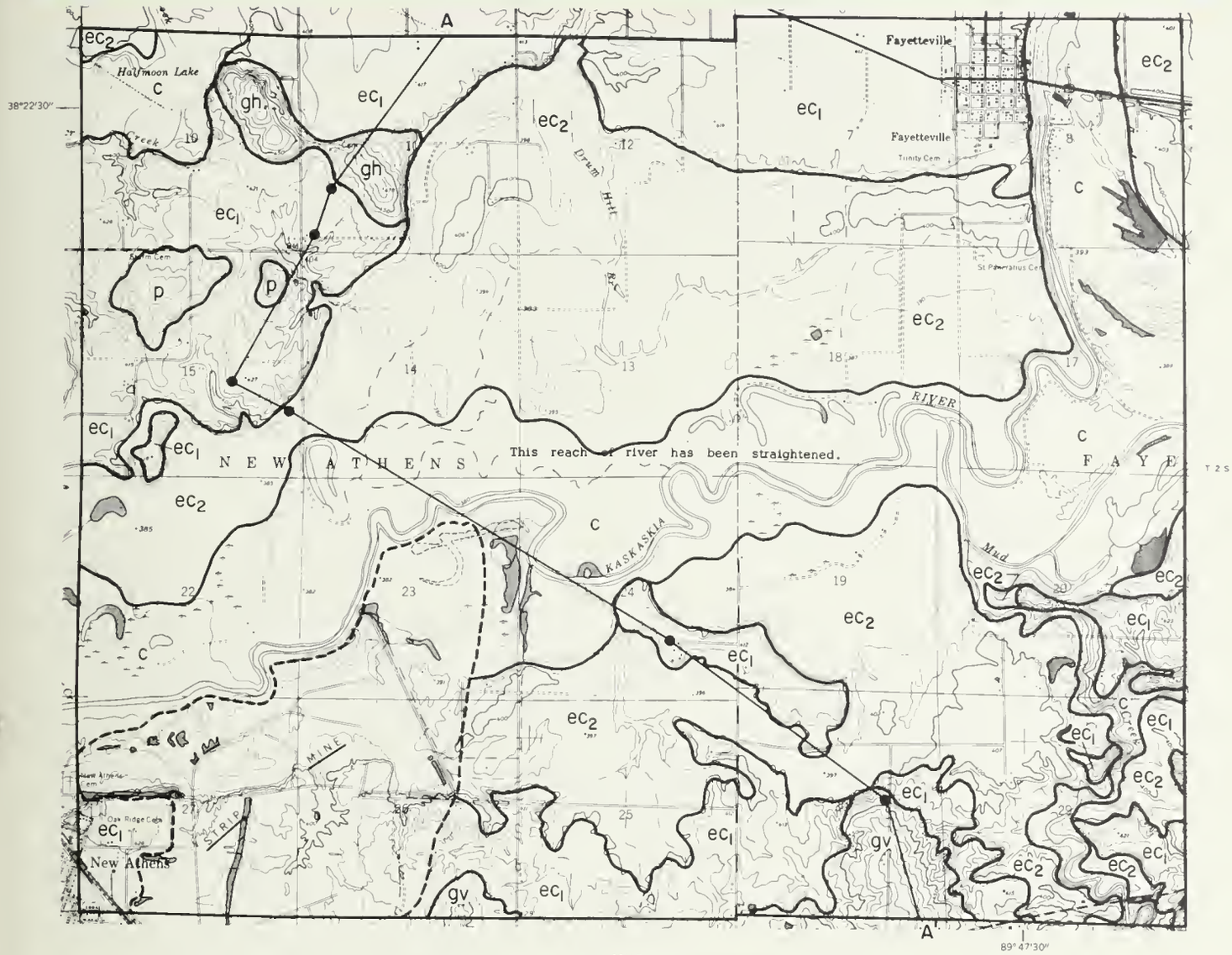
The entire proposed site is zoned "A", *Agricultural*, as the county is zoned. The proposed site would require rezoning to I-2, *General Industry*. No problems are anticipated in changing the zoning.

3.8 Geology

The unconsolidated deposits that overlie the bedrock consist of glacial deposits (drift), recent river deposits (alluvium), and windblown silt (loess). The areal relations are illustrated in the map of surficial geology (Figure 3.8.1), and the vertical arrangement of the unconsolidated deposits is illustrated in the cross section (Figure 3.8.2). The unconsolidated deposits range in thickness from less than 20 feet on the uplands in the northwest and southeast, to slightly more than 100 feet on the buried bedrock surface.

The upland of the area is generally underlain by 5 to 10 feet of loess on which the modern soils have developed. The unconsolidated deposits in the southwest quarter of the area have largely been removed by strip-mine operations.

3. Land



SCALE

1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 KILOMETER

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

EXPLANATION

ILLINOIS STATE GEOLOGICAL SURVEY

	Symbol	Unit	Description
Pleistocene Series, Wisconsinan and Holocene Stages	c	Cahokia Alluvium	Modern river deposits of sand, silt, clay and gravel, dominantly silt and sand.
	ec_2	Equality Formation Carmi Member	Lake deposits. Sediments of ec_1 are silts with interbedded sands and clays overlain by 2 to 5 feet of loessial silt. Sediments of ec_2 are usually clays and silts at lower elevations with loess cover thin or absent.
	ec_1		
Illinoian Stage	p	Pearl Formation *	Outwash sands and gravels, dominantly medium to coarse sand in the upper part.
	gh	Glasford Formation * Hegarstown Mbr.	Ice contact stratified drift containing variable amounts of glacial till, sand, and gravel.
	gv	Glasford Formation * Vandalia Till Mbr.	Glacial till and intercalated sand and silt.

* Units having highly weathered Sangamon Soil at the top are overlain by 5 to 10 feet of loessial silt of Wisconsinan age.

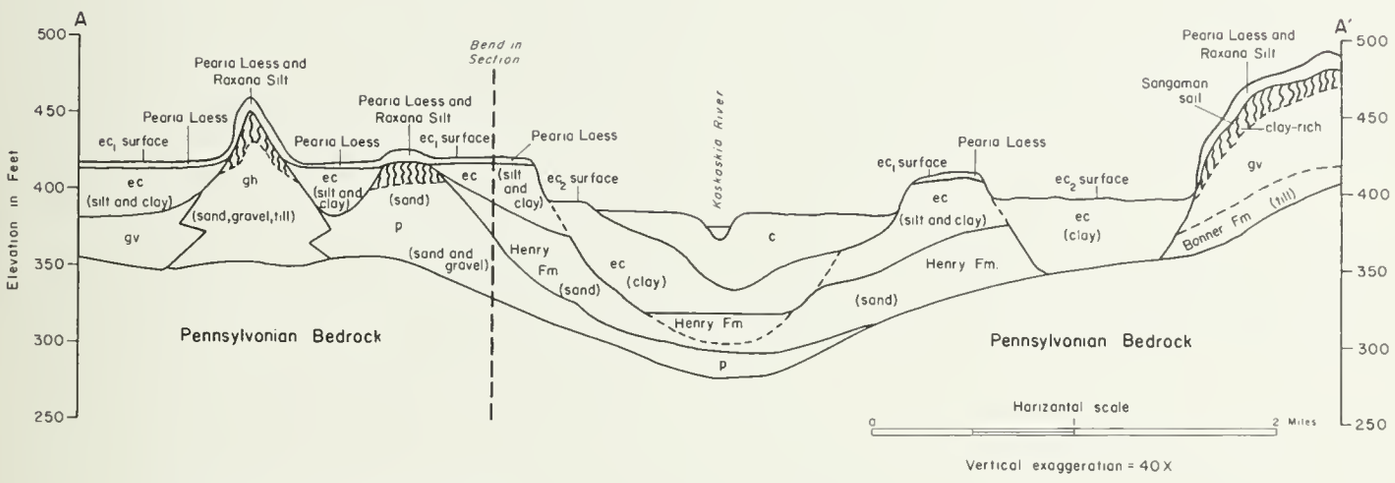
Approximate limit of stripping, July 1973.

A—A' Line of cross section, figure 3.8.1–2.

Surficial geology of New Athens-Fayetteville site area. Map shows distribution of unconsolidated deposits below the loess.

Fig. 3.8.1

3. Land



Illinois State Geological Survey

Cross-section of the unconsolidated deposits and bedrock topography in the New Athens-Fayetteville site area. Line of cross-section is shown on figure 3.8.1.

Fig. 3.8.2

3. Land

The ground-water conditions in south-central St. Clair County are variable, and the availability of ground-water supplies is dependent on the character of the water-bearing zones in the glacial drift and shallow bedrock. Sand and gravel deposits in the larger stream valleys are capable of yielding moderate to large ground-water supplies. Beneath the uplands the thin, discontinuous sands and gravels are capable of yielding only small supplies. Meager groundwater supplies can be obtained from thin sandstones and fractured limestones in the shallow Pennsylvanian-age bedrock. In the central and western part of St. Clair County, sandstones and limestones of Mississippian age belonging to the Chesterian Series (below the Pennsylvanian rocks) may yield small to moderate ground-water supplies. As depths of the bedrock units increase, the ground water becomes more mineralized. In the eastern part of the county, ground water in the Chesterian Series is too highly mineralized for most uses. Sands and gravels in the buried bedrock valley of the Kaskaskia River are capable of yielding moderate to large supplies of ground water.

In most of St. Clair County geologic conditions are suitable for normal types of construction. In a few areas there are limitations that have posed problems, but they are rarely so severe as to prevent development of a construction project. The broad aspects of the geologic factors that influence construction are discussed below. This discussion suggests kinds of geologic-engineering problems that may arise from disturbance of nature's equilibrium by construction. Detailed information for specific sites must be developed by additional investigation.

The upland till plain coded as gv (Glasford Formation, Vandalia Till Member) in Figure 3.8.2 is a favorable area for siting heavy construction. Till units having high bearing strengths are commonly encountered within 5 to 10 feet of the surface. The shallow bedrock may also accommodate heavy loading.

In places, terraces of lake silt coded ec_1, adjacent to the upland till plain and sand and till ridges, are underlain at depths of 20 to 30 feet by bedrock, till, or sands. These areas may also prove to be feasible sites for heavy construction.

The thick deposits of loess and silt, which have low strength and stability, may cause construction problems. The most important factors determining the strength and stability of the loess and silt deposits are (**1**) cementation of the grains with small amounts of clay and lime, (**2**) water content, and (**3**) rate of movement of the water through the deposits. The silt deposits have a uniform particle size with more than 80% silt-size particles (table 3.8.1). The small amounts of cementing material help develop high strengths in dry loess and, in contrast, provide little or no strength as the material becomes saturated with water. The fine and uniform particle size of the loess and silt makes it porous, with very small pore openings. Sediments with more than 30 percent clay-size particles tend to be nearly impermeable. The strong capillary action in the loess and silt deposits affects the rate of water infiltration as well as the rate of water drainage.

3. Land

Table 3.8.1

Engineering properties of selected surficial deposits from St. Clair County. (Number in parenthesis indicate number of samples run.)

Description	Particle-size analysis sand (%)	silt (%)	clay (%)	Natural moisture content (%)	Proctor density maximum dry density (lb/ft³)	optimum water content (%)	Potential volume change†
Silts	2	81	17 (50)	27.2 (45)	108.5	17.2 (5)	2.4—marginal (4)
Clayey silts	8	63	29 (7)	27.0 (98)	114.4	14.9 (7)	—
Sandy till	39	40	21 (6)	—	125.0	12.5 (4)	0.3—noncritical (4)
Silty till	27	42	32 (14)	—	120.2	11.1 (6)	0.4—noncritical (4)

†Maximum possible volume change from changing moisture conditions.

Accumulation of frost is dependent upon water movement as well as upon below-freezing temperatures. Silts tend to conduct water to the freezing zones. Therefore, fine-grained, water-logged silts are more susceptible to frost action than are clayey or very coarse deposits. Damage to lightly loaded buildings and roads from frost heaving in silts can be minimized by proper design. Compared to silts, most coarse materials are well drained because they have larger spaces between particles and do not develop high capillary forces.

Till or bedrock underlying the thick deposits of silt has high bearing strength suitable for the construction of most projects. In some areas the deposits beneath the silt are too deep to be of use in supporting foundations.

Particle-size analyses of samples from St. Clair County indicate that the till units, which have an equal distribution of sand-, and clay-size particles, can be compacted better than loesses and clayey silts, which consist primarily of silt- and clay-size particles. The natural moisture contents of the till units range from 19 to 22%.

The valley deposits are loosely consolidated. The shear strength of the sediments is generally low because their water content is high. Excavations for basements, sewers, and other underground installations require protective structures to prevent caving. During floods, part of the floodplain areas may be inundated up to about elevation 400 feet (MSL). Levees may be constructed to control surface water, but during times of high water levels the ground-water pressures may increase within the protected areas. Excavations in these areas would result in sandboils or quicksand.

3. Land

Parts of the floodplain consist of compressible organic deposits that may allow settlement of material under loading. Clayey deposits made up in part of clays that shrink and swell with changes in water content may be present in places (Table 3.8.1). Sediments near the surface that contain water are common in parts of the floodplain and are subject to frost heaving.

Spoil piles in the strip mine consist of a variety of mixed materials dumped in regular ridges. In many cases, coarse bedrock materials were deposited at the bottom of the ridges, and the finer surficial materials were deposited on the top of these ridges. An increase in depths of mining overburden generally has resulted in increased heights of the spoil piles. About 80 feet of overburden and coal were excavated in the mine east of New Athens. This area may be a feasible site for construction if bearing loads are supported by specially designed structures such as a soil cemented monolith. Adequate time must be allowed for these materials to consolidate and stabilize.

Various methods to improve the stability of the slopes are being tried. These methods include changing procedures of dumping, bulldozing the tops from the piles and filling the "v's" between ridges, planting of the slopes, and bulldozing and grading the surface to restore it to a gentle topography. The amount of redistribution of the materials depends on plans for subsequent use of the land.

Large pieces of bedrock are encountered in the piles. A knowledge of the geology of the overburden above the mined-out coal and the methods by which the overburden has been removed may help in anticipating the presence of large pieces of bedrock.

The materials in these piles have been subjected only to compaction loads of their own weight and therefore they may be expected to adjust to any additional loading. Because of the manner in which the materials in the piles were deposited, some materials may become compacted, causing the surface of the piles to settle. Some stabilization of the deposits probably occurs during a period of years after deposition, and this process may prove to be an important consideration in selecting building sites.

In general, the surfaces of the spoil piles are well drained. Because the spoil materials are porous, they allow water to rise within the piles. The increase in pore water pressure lowers the shear strength of the materials, and settlement of materials may take place. Water levels in the strip mine would normally be high, but the area is protected by levees and could be dewatered for construction.

Because of the obvious political and environmental advantages to utilizing strip-mined land for a portion of the proposed site, geological factors of the already stripped portion of River King pit #3 are being examined.

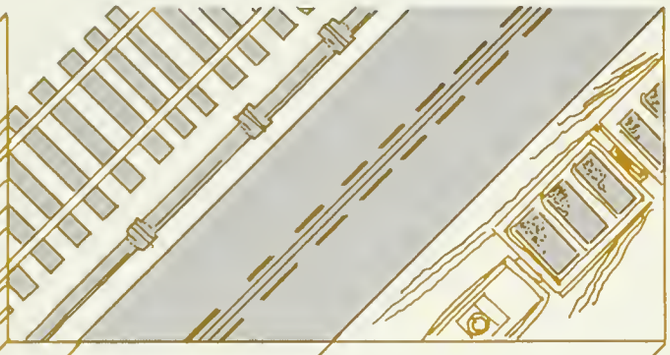
3. Land

3.9 Rights of Way to Coal, Railroads, Product Pipelines

The State owned land needs no additional right-of-way to the water. The State of Illinois is a riparian owner of the property and therefore has direct access to the water and rights in its use. Because much of the other proposed site land is owned by Peabody, it is not anticipated that attainment of other needed rights-of-way would represent a problem for the project. The privately owned land in the proposed site area is located, for the most part, in the Southeastern portion and access through those parcels will probably not be required, with the possible exception of land needed for access or easements to pipelines.

The Illinois Coal Development Bond Act gives the Department of Business and Economic Development the powers of eminent domain to obtain rights-of-way for land necessary to a coal development project. The only major restrictions on the use of condemnation is that a good faith effort be made to acquire such rights in the open market, and that failure to exercise condemnation would cause unreasonable delay or economic hardship on the project. Again, it should be noted that access to water, coal, railroads and product pipelines is greatly facilitated by their close proximity.

4. Transport/Distribution



4.

4. Transportation/Distribution

4.1 Airlines

Air service in the vicinity of the proposed site area is exceptionally good. This is due to the proximity of St. Louis International Airport, located eleven miles northwest of St. Louis, an approximate 1¼ hour drive from New Athens. The airport offers all of the services and reliability a major metropolitan airport would be expected to offer. These include a major aircraft repair station, a good restaurant, storage and numerous daily flights from early morning to late evening. Fifteen airlines provide service to all parts of the U.S. There are twenty-three non-stop daily flights to Chicago, seven to Cleveland, ten to New York City, five to Washington, D.C., and seven to Los Angeles. Lodging and convention facilities near the airport and in downtown St. Louis are among the best in the Midwest.

The Alton Civic Memorial Airport is located forty-five minutes from New Athens and is an excellent medium-size airport. Attended twenty-four hours per day, it offers two flights daily to Springfield and Chicago.

Sparta Community Airport has a bituminous north-south runway and can be reached in fifteen minutes from New Athens via Illinois routes 13 and 4. It has tiedowns and services and is attended twelve hours per day.

4.2 Railroad Service

The proposed site is served by the Illinois Central Gulf Railroad (ICG). The segment of the railroad that runs through New Athens is known as the St. Louis District of the St. Louis Division and is a single track railroad. Inspected in May, 1975, the ICG trackage in the vicinity of New Athens is some of the highest quality track in Illinois and would be suitable for service to the coal conversion facility. The section of track through New Athens consists of mostly 115 lb welded steel rail, and the track is FRA Class 4 (55 mph freight). The ICG furnishes fast and reliable service through New Athens with adequate switching capabilities available.

Specific characteristics are as follows: this line extends 67 miles from E. St. Louis to DuQuoin. There are five sidings, holding from 96 to 289 cars, located between E. St. Louis and DuQuoin. The train operations are governed by CTC—Centralized Traffic Control. The service frequency is excellent. There are freights three times daily in each direction. One local freight runs in each direction daily except Sunday, and there are six mine switch runs daily except Saturday and Sunday. For the track layout at New Athens, the passing track holds 198 cars and an intermediate siding holds 125 cars. There are three storage tracks, each for approximately 65 cars. The mine lead from the storage tracks to River King Mine #3 is approximately one-half mile long, running in a northeasterly direction.

There are no weight restrictions in effect on the St. Louis District and the normal high wide load can be handled on this line with no difficulty.

New Athens is 24.7 miles from the St. Louis Gateway and 42.3 miles from DuQuoin, which is located on the main line—Chicago to New Orleans. This gives direct service to the Chicago Gateway, the Memphis Gateway and to the New Orleans Port. Intermediate connections to the East can be made with the Penn Central at Effingham and Kankakee, the B&O at Odin, and the N&W at Tolono. Construction costs of new track are approximately $40.00 per lineal foot, not including any drainage or grading work. It should be noted that the River King Mine lead could be extended

4. Transportation/Distribution

to service the site since the lead is already running one-half mile toward the northeast from the main line. Adequate switching would be made available, as would any number of cars needed by the shipper. Again, the ICG is a reliable and efficient railroad and serves the area well.

Rates
The following are rail transport rates for oil, sulfur and ammonia. Unit train rates for coal movement are subject to numerous variables and require considerably more information to compute than is now available.

Oil (Bunker C)
The current commodity rate from New Athens to Chicago is $.64/100 lbs, subject to Rule 35 (loaded to marked capacity) at Ex Parte—305 A Level. The current commodity rate from New Athens to Memphis is $1.25/100 lbs, subject to Rule 35 at the Ex Parte 310 Level.

Dry Sulfur
The current Class Rate from New Athens to Chicago is $.79/100 lbs, with a minimum 80,000 lbs, at Ex Parte 305 A Level. The commodity rate to Memphis is $.81/100 lbs, with minimum 49,000 lbs, at Ex Parte 310 Level.

Anhydrous Ammonia
From New Athens to Chicago the rates are: $.94/100 lbs, but not less than 50,000 lbs./car, $13.02/net ton, but not less than 140,000 lbs./car, $9.06/net ton, but not less than 155,000 lbs./car. The above are subject to Rule 35 all at Ex Parte 305 level.

From New Athens to Memphis the rates are: $.89/100 lbs, but not less than 50,000 lbs./car, or $10.25/net ton, but not less than 155,000 lbs./car, subject to Rule 35 all at Ex Parte 305 level.

Note: Lower rates could be established on a point-to-point basis on an annual volume.

4.3 Highways

The site is approximately 30 miles from downtown St. Louis by U.S. Route 460. Fourteen miles of this distance are divided multilane highway with partial access control. St. Louis is situated at the intersection of Routes I-44, I-55, I-64, and I-70 on the interstate system. I-64, which is near completion, is accessed directly by Illinois Route 4, 13 miles north of Fayetteville. Also, proposed I-255 would bend around East St. Louis and travel northeasterly, twenty five miles from Fayetteville on U.S. Route 460. (See inner cover pocket for highway maps.)

Table 4.3.1 summarizes the traffic and physical characteristics of the connecting roads serving New Athens and Fayetteville and surrounding the proposed site. The condition of structures and surfaces on the state maintained system impose no special size or weight limitations on traffic in this area.

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Table 4.3.1

Highway Data

Characteristic	Highway		
	Ill. 13	U.S. 460	Ill. 4
No. of Lanes	2	2	2
Surface Condition	Better than adequate	Near Perfect	Adequate
Daily Traffic	2700-4300	3850-4200	1900-4400
% Trucks	7-8	12	3-5

Truck service can be provided by a number of carriers serving either the site area or an origin or destination point elsewhere. Table 4.3.2 provides general commodity rates for coal, ash, oil, and ammonia. Once shipping patterns are clearly identified, possibly more favorable point-to-point rates could be procured for the project site. The general Illinois truck size and weight limits are provided in The Illinois Vehicle Code, Chapter 95½. Permits for oversize and overweight loads are obtained by applying to the Illinois Department of Transportation.

The New Athens-Fayetteville area is also easily accessible by public passenger transportation. Scheduled intercity buses between St. Louis and Evansville, Ind. stop at Fayetteville. Greyhound stops at New Athens on its route from St. Louis to Paducah, Kentucky.

Table 4.3.2

Characteristic Commodity Shipping Rates

Commodity	Distance Traveled (miles)	Rate	
		A*	B**
Coal & Ash	3	82¢/ton	47¢/ton
	46—50	356	294
	96—100	571	525
	181—200	746	700
	376—400	1166	1119
Anhydrous Ammonia	1—25	24.0¢/100 lbs	
	46—50	34.2	
	96—100	54.1	
	191—200	101.4	
	391—400	203.4	
Residual Fuel Oil (5500 gallons minimum)	0—5	.80¢/gal	
	46—50	1.34	
	96—100	2.06	
	196—200	3.78	
	291—300	5.52	

**Group A* rates apply only on shipments from 1 origin site to 1 construction-site, 1 job-site or 1 stockpile.

***Group B* rates apply only when carrier is tendered a single shipment of not less than 500 tons from 1 origin site to 1 stockpile subject to item 497 (master bill of lading).

4. Transportation/Distribution

4.4 Access Roads to Site

St. Clair County roads are in very good condition and many have been recently improved with bituminous overlay. (See inner cover pocket for County highway map.) County Route 8 from New Athens east to Darmstadt has bituminous pavement in good condition with adequate width for trucks to pass easily. County Route 48 west of Fayetteville is slightly narrower, but is also paved with bituminous material and is in smooth condition. The same description applies to County Route D north from New Athens, County Route 92 west of Darmstadt, the road extending south from County Route 48 toward New Athens immediately adjacent to Illinois Route 13, and the northward extension of the north-south portion of County Route 48 connecting with U.S. 460 between Freeburg and Fayetteville. Although the pavement is narrow and potholed, bituminous material also covers the extension of County Route 49 north from County Route 8 and the southward extension from the north-south section of County Route 49. Other low volume (gravel or soil) roads enter the proposed site. The County Highway Commissioner has expressed an eagerness to facilitate the proposed site by offering to extend and improve, at no cost, county roads which feed into the proposed site.

4.5 Pipelines

There are pipelines in the proposed plant site area capable of transporting any marketable product that the plant could possibly produce, assuming the plant can meet the minimum requirements of the pipeline companies. A 22" line through the central part of the state could deliver the gas output of this plant to Illinois natural gas companies only. This offers the advantage that the sale would be intrastate only and exempt the plant from any present FPC jurisdiction. (A pipeline map is included in the inner cover pocket.)

Illinois Power Company's 16" natural gas storage system line is located approximately one-half mile southwest of the proposed site location. Assuming the natural gas meets pipeline gas requirements of 900 to 1000 Btu/cf, and the price was competitive, Illinois Power Company would be interested in purchasing 35,000 or more Mcf/day.

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Natural Gas Pipeline Company of America has 2-30" and 1-36" pipelines located approximately 30.5 miles east of the proposed plant site. Assuming price, quality and pressure requirements were consistent with their needs, Natural Gas Pipeline could purchase all the plant's natural gas production. The line presently operates at 858 psig to 700 psig.

Mississippi River Transmission Corporation has a 22" and a 26" natural gas pipeline located approximately 15.6 miles west of the proposed plant site. Mississippi River Transmission Corporation, assuming the quality and price were agreeable, would purchase at least 50,000 Mcf/day, and possibly a much greater volume in the future. Mississippi River Transmission Corporation lines presently operate at 250 psig to 600 psig.

Williams Brothers Pipeline Company has 2-10" water soluble fertilizer solution, non-pressurized pipelines located approximately 7.8 miles northwest of the proposed plant site. The minimum shipping requirements are 25,000 barrels/batch. The capacity of the line is 500 barrels/hour at approximately 500 psig.

Phillips Pipeline Company has 2-8" refined product lines approximately 19.0 miles northwest of the proposed plant site location. The minimum shipping requirements are 10,000 barrels/batch. The total capacity of the two lines is approximately 50,000 barrels/day. Minimum acceptance pressure is 40 psig and maximum discharge pressure is 1100 psig.

4.6 Barge Service

The Kaskaskia River Navigation Project began in 1967 as a means of bringing greater economic opportunity to the area and providing a stable water supply. The channelization of the Kaskaskia is now a reality, as its nine-foot depth and 225 foot width straighten the former twists and turns of the river. Four highway bridges and four railroad bridges have been relocated and a lock and dam have been constructed near the mouth of the river. This will provide a slack water pool to insure the required minimum nine-foot navigation depth during low flow periods and help to insure adequate water for comsumptive uses upstream. With two more major bridge relocations to complete, the project is running on schedule and should be completed, with complete navigability to Fayetteville, by 1978.

Predictions now estimate that 20 million tons of coal will move down the inland waterway each year. The development of the Kaskaskia River into a major transportation mode brings to the proposed site all the advantages of being within relatively few river miles of St. Louis, the largest port on the Mississippi. Of the four major commodity groups, fuel, coal, grain, and chemicals, coal represents 30% of total traffic; a figure which is likely to increase. Use restrictions, traffic capabilities, and fleeting areas of the Kaskaskia are not now defined for areas that will be utilizing barge service after the project is completed in 1978. Fleeting areas, of course, will be located where they can best serve the users.

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4.7 Optimum Distribution Channels and Cost

The industrial nature of the St. Louis Metropolitan Area, along with superior transportation modes, enhances marketing of products and by-products.

Liquid fuel demand will undoubtedly remain high and the potential markets in the St. Louis Metropolitan Area will not be difficult to locate. The commercial production of a liquid petroleum may warrant even the construction of a product line tap, assuming the product meets specifications. Other alternatives include river and rail transport for intermediate and long distance movement.

Synthetic natural gas will continue to be in high demand and the pipeline companies have expressed eagerness to purchase the product. Illinois has the largest natural gas storage capabilities in the U.S. The Illinois Power 16-inch natural gas line is within 4,000 feet of the proposed site. There are two underground natural gas storage areas in the project vicinity near Freeburg and Tilden. Northern Illinois Gas Company is planning on developing another underground storage facility in which they will rent space for storage during the less demanding summer months.

The technological breakthroughs regarding sulfur recovery promise a national surplus of this commodity. However, major industries in St. Louis use vast amounts of sulfur, with 1973 liquid sulfur imports of over 125,000 tons. Monsanto, Pfizer Chemical, Allied Chemical, Olin and others are the principal sulfur customers. Truck transport to these potential local customers would be the most economical transportation mode.

Many area industries utilize ammonia, which is also in demand. The nearby Williams Brothers fertilizer pipeline is a potential market as the Midwestern grain market represents the major use for this commodity.

The only known market for ash is for use as a cement additive. The economics of transportation and the quantities generated make marketing somewhat unlikely. However, we have proposed (Section 1.1.6) that the ash be disposed of in the mined-out sections of River King mine pit #3, adjacent to the proposed site. This would provide an economical and environmentally sound method for the necessary solid waste disposal.

5. Environment

5.

5. Environment

5.1 Federal, State and Local Agencies; Present and Projected Standards and Requirements

5.1.1 Water Quality

Current Level—Water quality aspects have been covered under sections 1.2.2 and 1.2.3. In general, water quality in the New Athens-Fayetteville area is excellent, violations of legal limits are minor and caused by non-point and natural sources. Fifteen years of sampling records are available for the reach.

Legal Limit—Water Quality Standards are established by Chapter 3, Part II, of the Pollution Control Board Rules and Regulations. These water quality standards are in addition to the effluent standards, defined in Chapter 3, Part IV, of the Rules and Regulations, and are to be met in the receiving waters outside the mixing zone. The water quality standards take into account additional factors not included in the effluent standards, such as the dissolved oxygen level in the receiving stream, unnatural sludge or bottom deposits, and unnatural color or turbidity. A list of constituents and their maximum concentration is contained in Rule 203 (f), of the Rules and Regulations.

Pertinent General Standards in Rule 203 are summarized below.

(1) Freedom from unnatural sludge or bottom deposits, floating debris, visible oil, odor, unnatural plant or algal growth, unnatural color or turbidity, or matter in concentrations or combinations toxic or harmful to human, animal, plant or aquatic life of other than natural origin.

(2) pH shall be within the range of 6.5 to 9.0 except for natural causes.

(3) Phosphorus: Phosphorus as P shall not exceed 0.05 mg/1 in any reservoir or lake, or in any stream at the point where it enters any reservoir or lake.

(4) Dissolved oxygen shall not be less than 6.0 mg/1 during at least 16 hours of any 24 hour period, nor less than 5.0 mg/1 at any time.

(5) Based on a minimum of five samples taken over not more than a 30-day period, fecal coliforms shall not exceed a geometric mean of 200 per 100 ml, nor shall more than 10% of the samples during any 30-day period exceed 400 per 100 ml.

(6) Any substance toxic to aquatic life shall not exceed one-tenth of the 48-hour median tolerance limit (48-hour TLm) for native fish or essential fish food organisms.

As noted in Section 1.2.3, the concentration of constituents in the intake water through the water evaporation process may present a problem in meeting several of the water quality standards in the process water discharge.

Permits Required—Types of permits that may be required are:

(1) A construction permit is required from IEPA prior to the start of construction on any water pollution control, sewage collection, or treatment facility.

(2) A NPDES permit is required from the U.S. EPA prior to the start of any new discharge. It is anticipated that the State of Illinois will soon have this permitting authority.

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(3) A construction permit is required from the U.S. Army Corps of Engineers for any intake or discharge structure that may be built in navigable waters.
(4) A permit from the Illinois Dept. of Transportation, Division of Water Resources, is required for construction of water intake and discharge flumes.
(5) A permit is required from the Illinois Department of Mines and Minerals for the drilling of water wells.

Aquifer Location and Susceptibility to Contamination—The present day Kaskaskia River Valley, between Fayetteville and New Athens, varies in width from about ½ to 3 miles and generally overlies the preglacial Kaskaskia River Valley. The valley fill materials consist principally of glacial outwash and alluvium and range in thickness from about 50 to 100 feet. Water-bearing sand and gravel deposits up to 40 feet in thickness are found throughout this portion of the river valley. In most areas these deposits are overlain by approximately 20 feet of silty overburden. This overburden is felt to be adequately impermeable to allow for the disposal of solid wastes without undue problems.

Water Sources in the Area—Other than the ground water sources that are found throughout the proposed site area, the only significant water sources are Shoal Creek, which drains into the Kaskaskia about 15 miles above Fayetteville, and Silver Creek, which drains into the Kaskaskia at New Athens.

5.2.1 Air Quality and 5.1.3 Particulates

The metropolitan St. Louis interstate air quality control region is comprised of 7 counties in Illinois. Two of these counties, namely Madison and St. Clair, also constitute the St. Louis (Illinois) Major Metropolitan Area (MMA). The St. Louis (Illinois) MMA is not at present in compliance with the national ambient air quality standards for total suspended particulates, sulfur dioxide, ozone and carbon monoxide. Therefore, the proposed site is in an area which is not at present in compliance with the national ambient air quality standards for the types of pollutants expected to be emitted by a coal conversion facility. Failure to meet the requirements of the national air quality standards is due primarily to the fact that a few major sources in the St. Louis MMA are not yet in compliance. The time frame described by Coalcon would put the operation of the demonstration coal conversion plant into 1982. It can be expected that sources not in compliance today will definitely be in compliance by this date, thereby allowing a normal industrial growth pattern for the St. Louis MMA.

An area within the St. Louis metropolitan air quality control region, consisting of St. Clair, Madison and Monroe counties, has been designated an air quality maintenance area (AQMA) for particulates (annual average), sulfur dioxides (24-hour average) and oxidants (one-hour average). The U.S. Environmental Protection Agency requires the State to develop a plan to maintain the effected standards. Such a plan for the St. Louis AQMA will be developed and proposed to the Pollution Control Board in approximately one year. Guidelines for the development of such a plan have been published by the U.S. Environmental Protection Agency.

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Of direct concern to a coal conversion plant located in the State of Illinois would be the following Rules and Regulations.

A. **Illinois Environmental Protection Act:**
Illinois Revised Statute, Chapter III ½, § 1001-1051 (1970 as amended). Section 9(a) of this act prohibits any person from emitting contaminants into the environment in quantities that would be injurious to human, plant or animal life, to health, or to property, or to unreasonably interfere with the enjoyment of life or property.

B. **Illinois Pollution Control Board's Chapter II, Air Pollution Control Regulations:**
a) **Part I:** General Provisions.
—Rule 103 (a) requires all new sources or any modified existing source to obtain a construction permit before construction of such a source is commenced.
—Rule 103 (b) requires an operating permit before a source is put into operation unless the initial operation is part of a testing program which was previously approved as a part of the construction permit.
—Other Rules under Part I specify certain conditions and information required for the evaluation of a construction or an operating permit.

The following is a list of the permit forms that will have to be submitted to the Illinois EPA:

APC-100 Episode Action Plan
APC-103 Dry Collector Waste Disposal
APC-104 Wet Collector Waste Disposal
APC-200 Permit to Construct or Operate
APC-203 Operating During Startup
APC-204 Operating During Malfunction and Breakdown
APC-220 Process Emission Source
APC-231 Reactor, Drum, Tower or Heat Exchanger
APC-240 Fuel Combustion Source
APC-260 Control Equipment

b) **Part II:** Emission Standards and Limitations for Stationary Sources
This part contains a comprehensive set of emission limitations, some of them applicable generally to all nonexempted sources of particulates, sulfur dioxide, hydrocarbons, carbon monoxide and oxides of nitrogen. In certain cases, specific processes and plants are required to comply with emission limitations solely developed for such processes and plants. Since coal conversion plants were not given special treatment, the general provisions specified in this part would be applicable. However, the power or steam generation plant associated with the coal conversion facility would have to comply with the emission limitations in a list of Rules generally applicable to a coal conversion facility. It should be noted that these emission limitations are compatible with the U.S. Clean Air Act, as amended, and applicable to new fuel combustion emission sources.

c) **Part IV:** Episodes.
Sources of greater than 100 tons per year of any specified air contaminant would have to file an episode action plan as specified in this part of the Rules and Regulations.

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C. **New Source Performance Standards (NSPS)**
Apart from the NSPS promulgated by U.S. EPA for fuel combustion emission sources and incorporated into the present Illinois Rules and Regulations, NSPS were proposed for coal preparation plants on October 24, 1974. Therefore, if a coal preparation plant is part of the coal conversion facility, emission limitations contained in these proposed NSPS would be applicable, if and when adopted.

D. **Prevention of Significant Air Quality Deterioration**
Under regulations recently promulgated by the U.S. EPA (39 FR 42510), Section 52.21 (d) requires the Administrator of U.S. EPA to review 19 new pollutant sources and to determine the effect of these sources on existing air quality. These 19 new sources include coal cleaning plants and fuel conversion plants. Under Section 52.21 (c), allowable increases in concentration over the base line air quality are specified for particulates and sulfur dioxide for areas designated Class I, II, and III. All areas in the state are presently designated as Class II. Thus, a well controlled coal conversion demonstration facility would not contribute sufficient particulates and sulfur dioxide to exceed the allowable increments specified in Section 42-21 (c) (2) (i). However, a commercial scale coal conversion facility may create some problems because of its size. Utilization of the best available control technology may solve this problem and this will be required of large new coal conversion plants.

5.1.4 Noise

Part II of Chapter 8 of the Illinois Pollution Control Board Rules and Regulations contains limitations on the sounds emitted from the facility, to nearby residential property, in terms of allowable octave band sound pressure levels in decibels. The allowable limits are shown in Table 5.1.1. The regulations apply to the operation of the facility and do not apply to construction noises.

The noise regulations specify different limits for daytime hours and nighttime hours. Since the facility will operate on a continuous basis, in effect, the facility will also meet the nighttime limits during the entire day.

There are no construction or operating permits required for the noise regulations, and no future permitting requirements are currently being planned or considered for facilities of this type.

Table 5.1.1

Allowable Sound Pressure Levels

Octave Band Center Frequency (Hertz)	Allowable Octave Band Sound Pressure Level (dB)	
	Daytime (7 a.m.—10 p.m.)	Nighttime (10 p.m.—7 a.m.)
31.5	75	69
63	74	67
125	69	62
250	64	54
500	58	47
1000	52	41
2000	47	36
4000	43	32
8000	40	32

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5.1.5 Waste Disposal

Landfills. On July 27, 1973, the Illinois Pollution Control Board adopted Solid Waste Rules and Regulations relating to the design, development, and operation of solid waste management sites.

Due to the non-putrescible nature of Coalcon's waste, the daily cover requirement would be waived. This results in a financially more attractive operation for the landfill operator.

Return to Mine—The proposal to use the coal mine as a repository for solid wastes, generated by the coal gasification plant (ash and sludge) is apt and proper and is not in violation of existing or proposed Solid Waste Rules and Regulations of the Illinois Pollution Control Board or the Illinois Environmental Protection Agency.

Contract Services—Contract waste disposal sites for putrescible/combustible wastes generated by Coalcon personnel in the course of daily plant operation are available in the St. Clair County area.

Town/Name of Site	Current Fees*
Marissa/Brown	$0.90/cubic yard
Belleville/Modern	$0.50/cubic yard
E.St. Louis/Mal Milam	$0.70/cubic yard

*Packer truck—compacted volume

5.1.6 Sewerage Disposal

Septic Systems—Septic systems which provide primary treatment need to be followed by secondary treatment plus chlorination prior to surface discharge (see discharge requirements below). Septic tank subsurface seepage field systems which are designed not to have a surface discharge still require a construction permit from the IEPA. The Department of Public Health has jurisdiction over septic systems serving less than 15 population equivalent (PE) but does not require a permit. The IEPA requires a permit for systems serving 15 PE or greater. Experience in the area has indicated that septic systems are not generally suitable due to soil conditions.

Municipal Sewerage Services—Availability of municipal sewerage service will depend on existing plant capacity and previously committed planning requirements for the design life of the treatment plant. The Village of New Athens is presently on a sewer ban which prohibits additional wastewater flows until system capability meets State requirements. The Village has applied for wastewater construction grant funds and qualifies for priority funding. Fayetteville Sanitary District, located just up river of the site, is presently not on a sewer ban.

Discharge Requirements—Currently, the discharge standards are defined by the U.S. EPA under the NPDES Permit Program. This would limit the discharge to 30 mg/l of BOD_5, 30 mg/l of suspended solids, and 200 fecal coliforms per 100 ml. Permitting requirements for sanitary treatment facilities are as follows:

1. A permit to construct the treatment facility is required from the IEPA. Sewage treatment plant design shall be in accordance with the design criteria contained in Water Pollution Control Technical Policy 20-24.
2. An NPDES Permit is also required from the U.S. EPA. However, it is anticipated this permit will soon be issued by Illinois.

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5.1.7 Agency Jurisdiction

The following agencies would have jurisdiction over the environmental aspects of this project.

Illinois Environmental Protection Agency
2200 Churchill Road
Springfield, Illinois 62706

U.S. Environmental Protection Agency
Region V
231 South Dearborn
Chicago, Illinois 60604

Department of the Army
St. Louis District
Corps of Engineers
210 North 12th Street
St. Louis, Missouri 63101

5.6 Current Pollution/ Environmental Problems

The site selected does not appear to impose serious environmental problems regarding noise, water, or land considerations. However, the site proximity to the Baldwin power plant, with its expected expansion of a third unit, might cause additional air quality considerations. In addition, the site is within the St. Louis Major Metropolitan Area which already experiences problems with air quality. This air quality control region is expected to be designated by the Illinois EPA as an Air Quality Maintenance Area (AQMA). Detailed discussion of these aspects is contained in Sections 5.1.2 and 5.1.3.

5.2 Weather
5.2.1 Temperature Variations

Average and extreme—Temperature variations applicable to the proposed site are summarized in Table 5.2.1. These data are based upon National Weather Service records for Sparta, Illinois, 20 miles southeast of New Athens.

Table 5.2.1.

Monthly Temperature Variations
(Degrees F.)

		Extremes	
Month	**Mean**	**High**	**Low**
Jan	34.0	77	-13
Feb	37.3	82	-13
Mar	45.8	87	- 6
Apr	57.4	91	22
May	66.5	99	29
Jun	75.6	107	43
Jul	79.3	114	48
Aug	77.9	111	44
Sept	71.0	104	31
Oct	60.5	96	21
Nov	46.3	84	2
Dec	36.6	75	- 7

5. Environment

5.2.2 Rainfall/Snowfall Variations

Table 5.2.2 summarizes rainfall and snowfall data obtained at Sparta, Illinois, 20 miles southeast of New Athens.

Table 5.2.2

Rainfall and Snowfall Variations (inches)

Month	Rainfall Mean	Rainfall Greatest Daily	Snowfall Mean	Snowfall Maximum Monthly	Snowfall Greatest Depth
Jan	2.49	2.72	3.3	10.6	6
Feb	2.39	3.22	3.6	17.0	9
Mar	3.49	3.04	3.2	24.0	11
Apr	4.06	3.67	0.1	3.7	1
May	4.34	3.80	0	0	0
Jun	3.66	4.53	0	0	0
Jul	3.18	2.76	0	0	0
Aug	3.10	5.84	0	0	0
Sept	3.25	2.94	0	0	0
Oct	2.82	3.18	0	0.3	0
Nov	3.19	3.50	0.9	7.0	7
Dec	2.54	5.35	2.2	8.7	5
Year	38.51	5.84	13.3	24.0	11

5.2.3 Humidity Variations

The relative humidity in this area has a greater diurnal variability than seasonal variability. Mean relative humidities at St. Louis are 75% at midnight, 82% at 6 a.m., 57% at noon and 59% at 6 p.m. These values are only a few percent different for the same hours for each month of the year.

5.2.4 Violent Storms

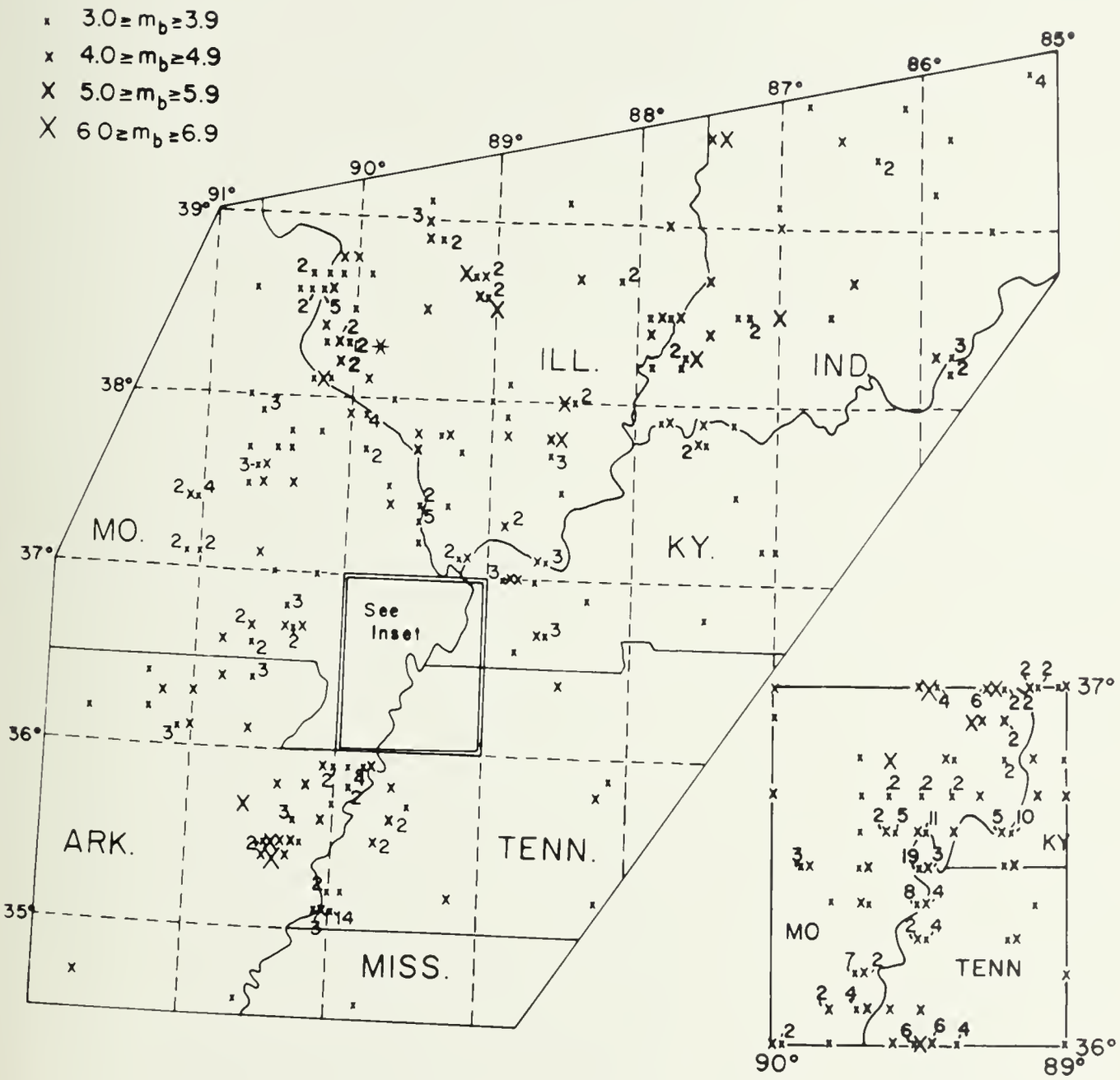
New Athens is located in an area where the frequency of occurrence of thunderstorms and tornadoes is somewhat higher than the average of the State. There are usually between 40-50 thunderstorms a year in this region with perhaps 2-3 days of hail accompanying thunderstorms and a few more days with damaging windstorms. During the period 1916-1969, the area around New Athens reported between 40-50 tornadoes. St. Clair County where New Athens is located had 11 tornadoes originating within its boundaries from 1916-1969.

5.2.5 Earthquakes, Floods

Earthquakes—The proposed site area is located about 120 miles north of New Madrid, Missouri, the approximate epicenter assigned to the great earthquakes of 1811-1812. Less than 30 miles to the southwest is the Ste. Genevieve Fault Zone, a past zone of weakness in the earth's crust that parallels the linear trending Mississippi River. This zone is thought to be associated with historic seismic events shown in Figure 5.2.1.

The New Athens site area lies within Seismic Risk Zone 2. In terms of the Modified Mercalli Intensity Scale, Zone 2 could occasionally experience an earthquake with sufficient intensity to produce moderate damage to man-made structures. The "design" earthquake for this region has a body-wave magnitude of 6.2.

5. Environment



Location of earthquake of body wave magnitude $\geq$ 3.0 from 1833 to 1972. New Athens-Fayetteville site area is shown by star.

Fig. 5.2.1

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Floods—The river gage datum at New Athens is 359.5 ft. (MSL). The flood of record on the New Athens gage is 398.85 ft. (MSL) and occured May 23, 1943, before construction of the Carlyle Reservoir. Since the completion and filling of the reservoir in 1967, the peak river height has been 388.58 ft. (MSL). Table 5.2.3 lists the peak river stages from 1968 to 1974.

Table 5.2.3

Peak River Stages at New Athens

Year	Peak River Stage ft. (MSL)
1968	27.75*
1969	27.52
1970	25.05*
1971	19.51
1972	21.02
1973	29.08
1974	19.66

*Stages for the maximum discharge. They do not necessarily represent the maximum stage of the year. Maximum stage often is one foot higher because it is affected by backwaters of the Mississippi.

5.2.6 Prevailing Winds and Inversions

Prevailing winds for the proposed site area are represented by the data in Table 5.2.4.

Table 5.2.4

Wind Data

	Prevailing Wind		Fastest Mile	
Month	Direction	Mean Speed (mph)	Direction*	Speed
Jan	NW	10.2	W	39
Feb	NW	10.7	NW	46
Mar	WNW	11.7	NE	45
Apr	WNW	11.3	W	45
May	S	9.5	SE	42
Jun	S	9.5	SE	60
Jul	S	7.6	NW	40
Aug	S	7.4	NW	48
Sept	S	8.0	SW	35
Oct	S	8.6	SW	48
Nov	S	9.9	S	41
Dec	WNW	10.2	W	44

*Direction is to 8-compass points only

Most inversions are found during the nighttime hours and the occurrences of daytime inversions are comparatively rare outside of times when fronts are in the area. The low level inversions are most often found when the sky is clear or nearly clear (=3/10 clouds) and when wind speeds are less than 7 mph.

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The frequency of occurrence, expressed as a percent of total hours during the season when an inversion or isothermal layer may be observed in the 500 foot layer, is shown in Table 5.2.5.

Table 5.2.5

Season	Inversion Frequency Percent of Total Hours with Inversions
Winter	35%
Spring	28%
Summer	34%
Fall	43%
Annual	36%

5.3 Quality of Life

5.3.1 General Appeal of Area

In St. Clair County there is a total of 45,124 acres of land. Of this total 33,293 acres are used for general urban purposes with 5,818 acres in industrial use. An additional 3,334 acres are utilized for major public and semi-public use. Major recreation covers 2,017 acres and commercial 662 acres.

At present, a major regional-scale shopping complex is in operation and undergoing expansion at Fairview Heights. The facility will contain in excess of 750,000 sq. ft., including three principal facilities (Famous-Barr, Sears and Penneys) and over 100 other commercial or service outlets. Other major facilities are also in operation and/or under development, including a full range of commercial outlets, restaurants, entertainment facilities, professional offices, and specialty shops.

A wide range of recreational opportunities are available in the Metro area. The Mississippi River provides a variety of water related activity. Many fine state parks are within a thirty minute drive, including Cahokia Mounds, Pere Marquette, and Frank Holten State Park. Busch Stadium offers sports enthusiasts football and baseball entertainment with the St. Louis Arena featuring hockey and basketball. The Ozarks and Shawnee National Forest are major outdoor recreational areas within easy driving distance of the St. Louis area.

The St. Louis Symphony, Municipa! Opera, and American Theater bring world famous talent to the area. A wide selection of museums further enhances the cultural attractions. The National Museum of Transportation, St. Louis Art Museum, and the Museum of Science and Natural History are just a few examples.

5.3.2 Quality and Capacity of Schools

Opportunities for higher education are available through the four major universities, 16 colleges and four junior colleges located throughout the region. Special School Districts offer unique advantages to the handicapped, as well as the gifted student.

The Illinois portion of the Metropolitan Area has five institutions providing higher education. They are Southern Illinois University, Edwardsville; Parks College, Cahokia; McKendree College, Lebanon; State Community College, East St. Louis; and Belleville Area College, Belleville.

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The Missouri section contains three significant institutions which are St. Louis University, St. Louis; Washington University, Clayton; and the University of Missouri, St. Louis.

Locally, over eighteen school districts serving students in the kindergarten thru 12th grade range exist within 20 miles of the proposed site. A telephone survey conducted May 20-21, 1975, to the offices of the school districts listed in Table 5.3.1 indicated a current total enrollment of 25,436 and current total capacities of 30,440.

Virtually all religious denominations are represented within the region. Many historic churches offer examples of unique architecture.

Area restaurants and entertainment establishments are numerous. Dining on the Riverboat Robert E. Lee is a most unusual experience, and a variety of nightclubs contribute an exciting and creative brand of entertainment.

Table 5.3.1

Capacity of School Districts in Madison and St. Clair Counties

Within 5-Mile Radius of Scott AFB	District Number	1970 Enrollment	Current Enrollment	Net Change	Total Capacity	Growth Capacity
1. Lebanon (K-12)	9	1,291	1,097	−194	1,340	+243
2. O'Fallon (K-8)	90	1,766	1,748	−18	2,350	+602
3. O'Fallon (High School)	203	1,099	1,330	+231	1,800	+470
4. Central (O'Fallon K-8)	104	395	311	−84	500	+189
5. Shiloh (K-8)	85	218	204	−14	300	+96
6. Mascoutah (K-12)	19	3,963	3,954	−11	4,250	+296
Subtotals		8,732	8,644	−88	10,540	+1,896
Within 10-Mile Radius of Scott AFB						
1. Freeburg (K-8)	70	718	711	−7	750	+39
2. Freeburg (K-12)	77	417	564	+147	630	+66
3. Belleville (K-8)	118	4,500	3,850	−650	4,700	+850
4. Whiteside (Belleville K-8)	115	282	282	0	330	+48
5. Wolf Branch (Belleville K-8)	113	281	278	−3	470	+192
6. Belle Valley (Belleville K-8)	119	753	828	+75	966	+138
7. High Mount (Swansea K-8)	116	409	398	−11	520	+122
8. Pontiac (Fairview K-8)	105	926	934	+12	1,134	+200
9. Grant (Fairview K-8)	110	1,326	1,098	−228	1,350	+252
10. Harmony (Edgemont K-8)	175	1,488	1,245	−243	1,650	+405
11. Signal Hill (Edgemont K-8)	181	506	495	−11	600	+105
12. Belleville (High School)	201	5,682	6,109	+427	6,800	+691
Subtotals		17,288	16,792	−496	+19,900	+3,108
Grand Total		26,020	25,436	−584	30,440	+5,004

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5.3.3 Availability and Cost of Housing, Building Activity, Financing

A wide selection of homes is available. The most popular three-bedroom homes are priced from $32,500 to $50,500, with the average price being around $39,500. Garden-type condominiums vary from $22,500 to $45,500, with the average being $31,500. Prices are even more reasonable in the surrounding counties on both sides of the river (Metro-St. Louis contains eight counties—four in Missouri and four in Illinois). Older pre-owned homes are available in all areas and priced from $15,500 to $55,500, with the average being $32,500.

For apartment dwellers, the St. Louis area offers a wide variety of garden apartments and high-rise suites located in the suburbs, in park atmospheres and in downtown St. Louis. Rentals vary for garden apartments from $150 to $325 per month, depending on location, and $175 to $450 per month for high-rise apartments, depending on size.

Table 5.3.2 lists the major residential developments initiated since 1970. To finance these homes there are 93 financial institutions in the Metro Area with deposits in excess of $5.5 billion.

5.3.4 Crime, Civil Unrest

While serious Illinois crime increased an average of 15.3 percent during 1974, St. Clair County's rate increased only 12.2 percent according to the Illinois Department of Law Enforcement. No major cases of civil unrest were reported for the same time period.

5.3.5 Demographic Profile

The total population of Southwestern Illinois in 1970 was 642,425. Of this number, 536,133 (83.5%) lived in the Illinois portion of the St. Louis SMSA and 106,292 (16.5%) lived in adjacent rural counties.

The distribution of the region's population is most readily described as a corridor-center pattern. This population distribution provides for a wide range of land development options. The core area provides a more highly urbanized atmosphere while the adjacent corridors offer a more suburban climate.

Age distribution within the area shows two distinct patterns. High birth rates during the 1950's increased the proportion of people in the younger age groups 0-14 in 1960 and 1970, and an outmigration of population in the 25-44 years of age group occurred during 1960-1970, thus lowering the population within that age group.

St. Clair County had a black population of 63,512 in 1970 comprising approximately 22% of the county's population. This population is concentrated primarily in East St. Louis and the adjacent communities of Alorton, Centreville and Brooklyn.

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Tables 5.3.3 and 5.3.4 depict population trends and projections for St. Clair County. As can be noted, the population is increasing at a decreasing rate. In addition, the projections reflect a relatively stable growth rate averaging 2% per year.

Table 5.3.2
Availability and Cost of Housing—Major Residential Developments Initiated or Planned Since 1970

Residential Development Name	Location	Dwelling Unit Types and Amounts	Existing Status
1. Stonehedge	Belleville	Mixture of 1, 2, and 3-bedroom single-family units; $37,500-$45,000 range	12 units built 88 additional units to be completed by fall, 1976
2. Mobile Home Park	Belleville	135 mobile home units/pads	Zoning and platting proposal submitted to Belleville City Council for approval
3. Mobile Home Park	Belleville	65 mobile home units/pads	Same as number 2, above
4. St. Clair Village	Belleville	240 units total 80 1-2 bedroom (elderly) 12 4 bedroom apartments/ townhouses 84 3 bedroom apartments/ townhouses 64 2 bedroom apartments/ townhouses Rentals $182.00-$270.00	Completion by September 1975; currently approximately 80%, existing units available
5. Pine Tree Station	Belleville	Total of 40 single-family units; $30,000-$40,000 range	28 occupied 12 nearing completion for sale
6. Locust Hills	Lebanon	565 unit total; apartment, townhouse, and single-family mix	Zoning/platting proposal submitted for approval; development of approximately 100 units per year
7. Medico	Mascoutah	500+ units; 254 single-family, 150 multi-family, 100 condominiums; 160-acre site, estimated $20 million development	
8. Oak Tree Estates	O'Fallon	80 single-family units	Platting approved; development to begin
9. Parkview Gardens	O'Fallon	47 single-family & 15 duplex units	Same as number 8, above
10. Fairwood East	O'Fallon	50 single-family units	Same as number 8, above
11. Ausbury Park	O'Fallon	12 single-family units	Same as number 8, above
12. Westpark Centre	Columbia	Planned unit development; commercial, single-family, multi-family	Under development
13. Cottonwood Station	Glen Carbon	Planned unit development; commercial, single-family, multi-family; purchase ($30,000-$100,000) and rentals	Developed and expanding; single-family dwelling units currently under construction, existing units available

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Table 5.3.3

St. Clair County
Population Trends 1940-1970

1940	% Change	1950	% Change	1960	% Change	1970
166,899	23.3	205,995	27.4	262,509	8.6	285,199

Table 5.3.4

St. Clair County
Population Projections 1970-2000

1970	1980	1990	2000
285,199	309,000	342,990	387,780

5.3.6 Cost of Living

While the St. Louis region has a great deal to offer in the way of jobs, education, recreation and cultural pursuits, it can also point with pride to another statistic. It has the 12th lowest family cost of living among the 15 major cities in the United States, according to a recent study by the Department of Labor.

In addition, the cost of living in the St. Louis region has increased at a slower pace than the national average. From June of 1973 to June of 1974, the Consumer Price Index rose nationally 11.1% while the St. Louis area increased 10.4%.

5.4 Community Services

Medical services of the region are among the best in the country. There are a total of 13,753 hospital beds available in the metropolitan area and 2,181 doctors offering a wide range of specialities. Hospitals servicing the area include such well known facilities as Barnes, St. Louis Childrens, St. Louis University and Cardinal Glennon.

The St. Clair County Sheriff's Department is one of the best in the State. The Department has 34 full time deputies who have completed professional training and are under the merit system. The recently completed county jail detains federal as well as local prisoners which indicates the confidence Federal officials have in the local law enforcement system.

Fire protection is provided by a series of volunteer departments in the rural areas of the county. The major cities in the area have full time firemen with well-equipped fire stations.

Insurance underwriters have indicated that for a project the magnitude of a coal conversion facility, a volunteer brigade would be required.

Water and sewer services are provided by a series of municipal systems, rural water districts and rural sewer districts. A considerable amount of long range planning has been done to assure adequate services throughout the area.

5. Environment

5.5 Active Environmental Groups, Community Attitude, Cooperation With Industry

Table 5.5.1 lists the active environmental groups in Illinois. Two of these groups express concern specifically on coal conversion facilities. They are the Illinois South Project (agricultural land conservation group) and Illinois Environmental Council (lobby group). The use of reclaimed land for a project of this magnitude should be a major advantage toward establishing a rapport with these groups.

The community attitude is strongly in favor of a coal conversion facility. This attitude is reflected in letters received from the Mayor of New Athens and the St. Clair County Board Chairman. (See Appendix 1.)

Excellent cooperation exists between the communities in the area and local industries. This again is contained in the above mentioned letters outlining their willingness to assist with this project. Upon request appointments will be made with local industries at which time community attitude can be discussed.

Table 5.5.1

Active Environmental Groups

Audubon Society
Ms. Marjorie Molyneaux
7522 East End Avenue
Chicago, Illinois 60649

Citizens For A Better Environment
Mr. Dennis Adamczyk
59 East Van Buren
Suite 2610
Chicago, Illinois 60603
312/939-1984

Clean Air Coordinating Committee
Mr. Richard Kates
33 North LaSalle
Suite 1900
Chicago, Illinois 60602
312/236-8400

Illinois Environmental Council
Mr. Jerry Wray
225½ East Monroe
Springfield, Illinois 62701
217/544-5954

Illinois South Project
Mr. Mike Schechtman
412 South Division
Carterville, Illinois 62918

Illinois Wildlife Federation
Mr. Ace Extrom
13005 South Western Avenue
Blue Island, Illinois
312/388-3995

Izaak Walton League
Mr. Arthur Richardson
Box 163
Wayne, Illinois 60184

League of Women Voters
Ms. Kathy Schuck
67 East Madison
Suite 1408
Chicago, Illinois 60603
312/236-0315

Sierra Club
Mr. Glen Tockstein
(President—Illinois Chapter)
911 Langdon Street
Alton, Illinois 62002
618/465-1463

5. Environment

5.6 Current Pollution/ Environmental Problems

The site selected does not appear to impose serious environmental problems regarding noise, water, or land considerations. However, the site proximity to the Baldwin power plant along with its expected expansion of a third unit, might cause additional air quality considerations. In addition, the site is within the St. Louis Major Metropolitan Area which already experiences problems with air quality. This air quality control region is expected to be designated by the Illinois EPA as an Air Quality Maintenance Area (AQMA). Detailed discussion of these aspects is contained in 5.1.2 and 5.1.3.

5.7 Undesirable Site Features

The proposed site area will not harm or impact any buildings or sites of historical or archeological significance. The land mined east of New Athens is part of an archeological area, but the plant site, east of the River King Pit #3 is not included in that designation. There are no endangered plant or animal species in or around the plant site. Development in the proposed site would not destroy any parks or recreation facilities. Obviously, there will be an environmental impact whenever development of an area occurs, but Coalcon's desire to become a good neighbor reflects a healthy attitude which will pay dividends to the inhabitants of the general area.

A variety of invertebrates and vertebrates inhabit the Kaskaskia River. Invertebrates include stonefly nymphs, isopods, and several species of mussels. Vertebrates include a number of species of frogs, turtles, and water snakes. Wood ducks, teal, and mallard are commonly found in the area close to the river and provide a valuable hunting resource. Green heron and the belted kingfisher are also common birds along the Kaskaskia River.

The fish population belongs primarily to the wide ranging and big river species. Among the fish of both commercial and sport fishing value found in the river are: gar, goldeye, carp, buffalo, northern redhouse, river carpsucker, and channel catfish. Common forage species include the bluntnose minnow, fathead minnow, and gizzard shad.

The undisturbed flood-plain forest tree species include cottonwood, willow and sycamore. Away from the river exists elm and hackberry.

In open forests, understory plants are luxuriant and varied. Many types of grasses, weeds and sedges abound and this is home for the deer, the bobwhite quail, woodchucks, gray foxes and oppossum. It is doubtful that development of the plant site will create harm to the area habitat because suitable woodlands exist north, northeast and southeast of the proposed plant site for proliferation of the area plant and animal life.

6. Business Climate

6.

6. Business Climate

6.1 Taxes

Business Taxes—Real estate taxes are based on the fair market value for the property. This determination is made by negotiations between the supervisor of assessments of the county, a hired appraiser, and the corporation owning the facility. Assessed valuation is approximately 39% of the fair market value. The rate for New Athens is $4.88 per hundred dollar assessed valuation, broken down as follows:

School District Unit 60	3.0670
Junior College	.1809
Township	.1684
County	.98
Road & Bridge	.38
Fire	.1077

The rate for Fayetteville Township is $6.21 per one hundred dollar assessed valuation broken down as follows:

High School District 77	1.7479
Grade School District 70	1.9611
Junior College	.1809
Sanitary District	.5056
Township	.3039
County	.98
Road & Bridge	.5520

This is the only property tax on a facility. It is levied and collected by the county.

There is no inventory tax and no payroll or occupation tax. Sales tax would be applicable to the cost of the machinery and equipment to be located in the facility. If the equipment is purchased in the State of Illinois, there is a 5% sales tax on the equipment. If it is to be purchased outside of Illinois, there is a 4% use tax. These taxes are based on the cost to the purchaser. If the equipment is of a highly specialized nature, such that it would be fabricated especially for the facility, a service tax would apply, and the tax rate would be based on the cost of materials to the fabricator of the equipment and not on the final purchase price to the user. In construction the building material is subject to sales taxes, but the labor is not. There would be no sales tax on the coal that would be used to supply the facility, as this would be considered a conversion of tangible personal property and would not be a taxable action at that point. Also there would not be a sales tax on the final product to a public utility, as there is still one final purchaser.

The facility would have to collect State withholding tax from its employees and would have to pay that quarterly to the Illinois Department of Revenue. The facility itself falls under the Illinois Corporate Income Tax. If the facility is operated by a foreign corporation the proceeds from this plant would be taxable. There is a 4% corporation income tax. It is based on net income which is the same criteria used for federal tax purposes.

There is an annual corporate franchise tax of one tenth of one percent of stated capital and paid up surplus. There is a motor fuel tax which is 7.5¢ per gallon. There is not value added tax.

Unemployment compensation tax is to be no greater than 4% of payroll and is usually considerably less. The actual amount is based on a formula pertaining to history in the industry and for the actual facility.

6. Business Climate

Personal Taxes—There is no difference between real estate taxes applied to residential, commercial and industrial property. The same rates apply to all. Personal income tax is 2.5% of adjusted gross income. Sales tax in Illinois is 5% and applies to all purchases. There is no personal property tax on individuals and all personal property tax is scheduled to be ended in 1979.

The apportionment of State taxes is as follows:

Personal Income	24.30%
Corporate Income	6.23%
Sales Tax	32.53%
Motor Fuel Tax	10.17%
Alcohol	2.02%
Tobacco	4.42%
Insurance	1.38%
Public Utilities	5.18%
Paramutual betting	1.35%
Amusements	.05%
Gift & Death taxes	2.39%
Other	9.98%
	100.00%

Tax Incentives—If the facility is to be located on State of Illinois land, wherein Coalcon would be a lessee, it has been indicated that the County Board of Assessments would negotiate a 5 to 10 year moratorium on the use tax for the State land. State land leased to a private party can be taxed by the counties as if it were owned by the lessee. This taxing arrangement is not mandatory on the part of the county so they do have room to negotiate.

Further, the county assessors can provide incentive in the manner in which property is valued at the time of the initial determination of fair market value.

County tax trends have averaged about a 4% per year increase during the past decade but are climbing at a lesser rate. The New Athens Township tax rate has remained relatively stable.

6.2 Zoning

St. Clair County has a zoning ordinance. The proposed site location is currently zoned "A," *Agriculture*. A zoning change to "I-2" *General Industrial* would be required for the project before the building permit is issued. Rezoning can be accomplished either by the County Board on their own initiative or the State of Illinois can apply for rezoning.

The county zoning regulations should pose no constraints to the spatial designs of the site and the main plant. The industrial regulations require, for instance, 15 foot front yard depth, 25 foot side yard depth, on a street, 40% maximum lot coverage, and 45 foot maximum principal building height.

There is a master land use plan for the year 2000 for Madison, St. Clair and Monroe counties, prepared by the Regional Planning Commission. The plans developed for the county show clearly that coal development at the proposed site location is compatable with the master plan and with the potential land uses around the channelized Kaskaskia river. In essence, there would be no limitations on construction or operation of the plant around the proposed site area.

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6.3 Building Codes, Labor Laws

St. Clair County must issue building permits before construction can start. They are issued upon application. Building codes in the county apply the usual minimum safety and structrual requirements to dwelling units. They do not, however, apply to the construction of industrial buildings.

The State of Illinois is not a right-to-work State. Therefore, closed shop contracts are legal in Illinois. The Illinois Anti-Trust Act, provides exceptions from enforcement under the criminal Anti-Trust provision, provided that the activities of any labor organizations or an individual member thereof are directed solely to labor objectives which would be legal under the laws of the State of Illinois or the United States, (Ill. Rev. Stat. Ch. 38, Sec. 60-5). Furthermore, the State law prohibits the use of an injunction to terminate work stoppages, strikes, or picketing as long as such activities are carried out in a peaceful manner, with no attempts made to intimidate or threaten persons (Ill. Rev. Stat. Ch. 48, Sec. 2a).

6.4 Community Attitude Towards Industry

The idea of locating a coal conversion facility in the New Athens-Fayetteville area has broad public support. We have received several letters from various local government and community leaders indicating their interest. (See Appendices.) The opening of a new mine near Albers, Illinois had wide public support as was indicated during the series of programs sponsored by Monterey Coal Company.

The news media has reported on various environmental groups' concern over a coal conversion facility. However, the majority of the coverage has been favorable.

Community/industry relations are good. Cooperative efforts to assist local industry are underway in many communities and appointments with company and community leaders will be arranged upon request. Section 2.2.3 lists major area corporations with more than 500 employees.

St. Clair County and especially the New Athens-Fayetteville area are relatively stable. There were nine elections on union representation in St. Clair County during 1974. These elections resulted in five firms being organized. Financially the County has seen a steady growth in its 24 banks which had total deposits of $735 million in 1974. The stability of the area also extends to the political structure with the majority of elected officials being retained during the last election.

Both public and private financing is available in Illinois. Of paramount importance, the state legislature has authorized the expenditure of up to $70 million for grants on coal related projects. In addition, industrial revenue bonds can be issued up to $5 million to finance manufacturing facilities. The St. Louis Metropolitan Area banks have deposits in excess of $6 billion.

The State has authority to issue bonds to be used to purchase pollution control equipment. The equipment is to be used to prevent emission of contaminants, but not for precleaning of fuel. Therefore, the plant itself will not qualify for the bonds, but equipment in the plant that prevents pollution emission will qualify. These bonds could be a potential method for Coalcon to finance portions of their facility at a lower rate.

6. Business Climate

During the past five years, 38 new manufacturers have located in the St. Louis region while 103 firms have expanded their operations. Unfortunately, 22 companies have ceased operation during the same five year period due to economic reasons.

Public attitudes toward coal development in Southern Illinois are very favorable. Coalcon can expect to witness a good deal of excitement and enthusiasm toward the concept of turning coal into cleaner, more marketable products and broadening the economic horizons and natural resource base of Southern Illinois.

Industrial projects already begun or planned for construction during 1975 include:

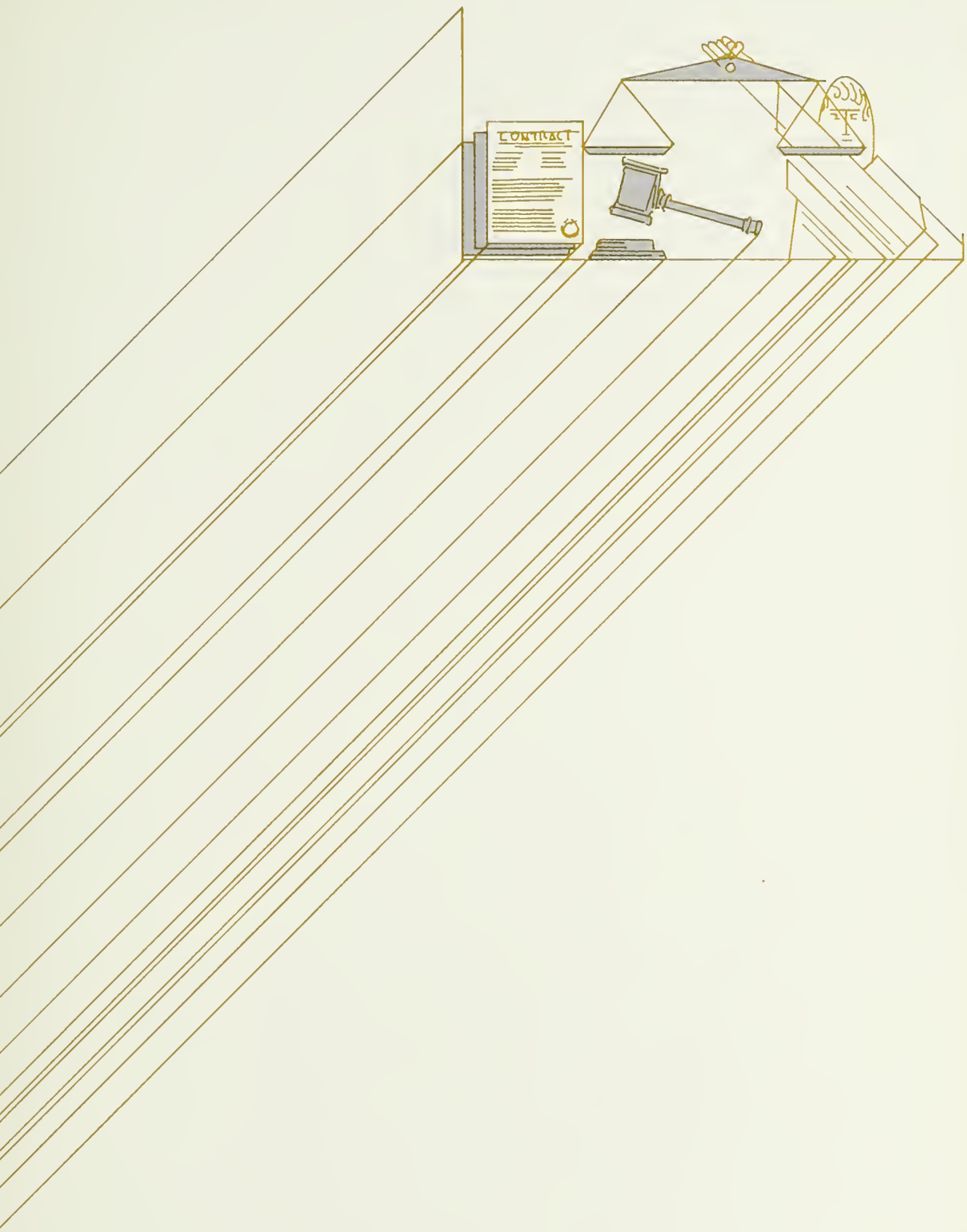
1. A multi-million dollar expansion at the Granite City (Madison County) plant of American Steel Foundries Division of Amsted Industries, Inc. This project will increase the plant's production capability for railroad freight car components by 20%.
2. A $1.2 million expansion of Knaust Mushroom, Inc. at Valmeyer (Monroe County). This project will enable conversion of production from canned mushrooms to fresh mushrooms.
3. Reactivation of a 114,000 sq. ft. building in Wood River (Madison County) by St. Louis Refrigerator Car Co. to maintain, repair, and rehabilitate railroad cars.
4. A new warehouse for Jennison-Wright Corp. in Granite City (Madison County).
5. A new multi-million dollar plastics plant for Monsanto Co. in Sauget (St. Clair County). The plant is expected to be operational by the Fall of 1977.
6. A new warehouse for Wicks Organ Co. in Highland (Madison County).
7. A new warehouse for Dow Jones and Co. in Highland (Madison County).

Those new industrial operations and expansions on which construction commenced in 1973 represent a capital expenditure of about $20 million.

Those new industrial operations and expansions on which construction commenced in 1974 represent a capital expenditure of about $24 million.

Although current economic conditions indicate that major industrial expansion and growth will not likely occur in this area over the next few years, this region's location, transportation, and other economic advantages suggest a promising future for industrial development activity.

7. Legal Status



7.

7. Legal Status

7.0 Legal

The two major federal environmental laws which would affect the operation of a plant such as this are the Clean Air Act of 1970 and the Water Pollution Control amendments of 1972. The State of Illinois has implemented comprehensive compliance plans to carry out the dictates of these federal acts. Illinois is presently requesting approval of regulations enacted by the Pollution Control Board to administer the National Pollution Discharge Elimination System (NPDES). The Illinois Environmental Protection Act provides for a Pollution Control Board which enacts regulations and acts as an environmental court of first review, and the Illinois Environmental Protection Agency, which is an investigatory, prosecutorial and permitting agency for the State environmental programs. Furthermore, the State of Illinois regulates solid waste disposal and noise pollution.

Illinois has no coal or other mineral severance tax. Strip mine reclamation for such mining is mandatory. There are no statutory regulations for the quantitative use of water. Water use is regulated by common law principles of riparian rights for surface waterways and the English doctrine for sub-surface water.

A legal discussion regarding the land of the site proposed is more fully covered in Section 3.

Labor statutes in the State of Illinois provide for the health, safety and general welfare of the people and community as a whole. They are not designed to favor one sector of society over another. The major thrust of these laws can be categorized as: health and safety; minimum employee protection; prevention of financial catastrophe for workers; and prevention of discrimination by employers.

The health and safety acts cover a wide range of protection concepts such as providing minimal safety requirements in the Illinois Health and Safety Act, (*Ill. Rev. Stat.*, Ch. 48, Sec. 137.1 et. seq.). This act incorporates the standards issued under the Federal Occupation Health and Safety Act of 1970. These statutes provide for a safe and healthful working environment.

Statutes to guarantee the rights of workers in Illinois to fair compensation are integral portions of Illinois law. Most of these statutes are consistent with nationwide standards. Statutes in this category include the Hours Of Labor Act, (*Ill. Rev. Stat.*, Ch. 48, Sec. 1 et. seq.); the Six Day Week Law (*Ill. Rev. Stat.*, Ch. 48, Sec. 8 et. seq.); the Child Labor Law, (*Ill. Rev. Stat.*, Ch. 48, Sec. 41.1 et seq.) and the Illinois Wage Payment Collection Act, (*Ill. Rev. Stat.*, Ch. 48, Sec. 39 et. seq.). If there are eating facilities at the plant, the Sanitary Inspection Act-Food and Drug, (*Ill. Rev. Stat.*, Ch. 56½, Sec. 67 et. seq.) would mandate cleanlines standards for the cafeteria facility and inspection by the State Public Health Department.

As of January 1, 1975, the minimum wage for employees in the State who work for employers with more than 5 workers is $1.90 per hour. This will rise to $2.10 as of January 1, 1976.

7. Legal Status

There are two statutes which protect employees against financial catastrophies. These two statutes are the Illinois Workman's Compensation Act and the Illinois Unemployment Compensation Act.

The Workman's Compensation Act, (*Ill. Rev. Stat.*, Ch. 48, Sec. 38.1 et. seq.) protects both employer and employee. While it requires arbitration of claims before the Industrial Commission, employers covered by the program have a clear picture of what their ultimate liability will be for job related injuries. The employee is likewise insured that the employer is financially responsible to make payments under the award and is also assured of prompt ajudication by the Commission. Rates for Workman's Compensation Insurance are based upon the actual conditions of the facility, number of employees, and other factors used in calculating insurance actuarials. At this time there is insufficient detail as to the plant to determine what a rate for such coverage would be.

Unemployment compensation is a program to maintain a minimum source of cash flow to employees who are laid off from work through no fault of their own. The cost of unemployment insurance under the Illinois Unemployment Compensation Act, (*Ill. Rev. Stat.*, Ch. 48, Sec. 300 et. seq.) is based on a percentage of payroll. The base figure is 2.7% and can raise to a level of 4% or be reduced to a level of 0.1% depending on a historically determined experience factor.

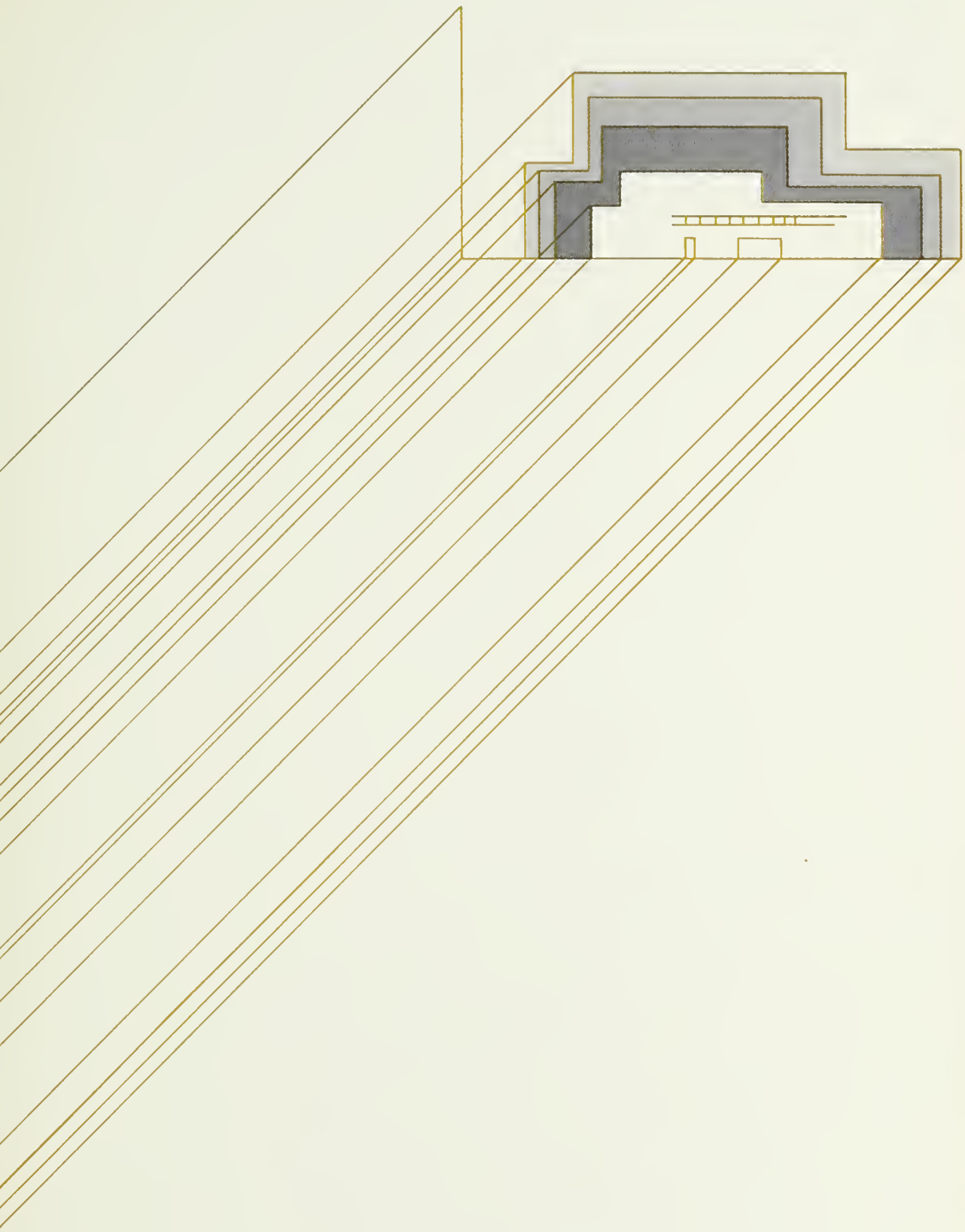
The final type of labor laws in Illinois are those designed to prevent discrimination in employment. Such statutes protect workers from arbitrary employment practices based on race, creed, age, and national origin. These laws carry out the intent of both the U.S. and State Constitutions.

The Illinois Fair Employment Practices Act (*Ill. Rev. Stat.*, Ch. 48, Sec. 851 et. seq.) covers discrimination in hiring and discharge of employees in the State of Illinois. The Act is administered by the Illinois Fair Employment Practices Commission which promulgates rules as provided in the Act and sits as a court of first review for violations of the rules. Other acts following these non-discrimination policies of the state include:

1. Age—In Discrimination In Employment Prohibition Act (*Ill. Rev. Stat.*, Ch. 48, Sec. 881);
2. Equal Opportunity to Handicapped Act (*Ill. Rev. Stat.*, Ch. 38, Sec. 65-2); and
3. Violation of Civil Rights—Criminal Code (*Ill. Rev. Stat.*, Ch. 38, Sec. 13-2).

8. Insurance Coverage

9. Suitability for Expansion



9.

8. Insurance Coverage

8.0 Insurance Coverage and Rates

Extended coverage rates for the conversion plant are virtually unattainable because there is no historical data with which to compare the proposed plant and there is no information on such design criteria as building construction, sprinklers and fire protection. Agents are reluctant to quote prices based on the design similarity to petroleum refineries. Before rates are defined, the Illinois Service Office, a rate-making body, would require a complete process flow chart and plant blueprints. Five insurance agents contacted in the St. Louis area were confident that, given the appropriate material, their companies could insure the plant and supply the necessary and desired coverage.

Workman's Compensation insurance is most often provided by private coverage carried as part of the employer's total insurance package. The State of Illinois does provide for high risk pool coverage for those facilities that cannot obtain such insurance privately. Under Workman's Compensation or Occupational Disease Insurance For Rejected Employers Act, (Illinois Revised Statute 73, Sec. 1081 et seq.) all employers can and will be assigned a carrier at a premium commensurate with the risk. The cost of commercial insurance, or the cost of self-insuring, can only be determined when adequate details of the plant design, risks, and number of employees and classifications are made available.

Unemployment Compensation is an administered insurance-benefit program with rates of contribution set by statute (Ill. Rev. Stat. 48, Sec. 300 et seq). The base rate for such coverage is 2.7% of the gross salary paid the employee. This figure is determined by a formula based upon three years past experience. The contribution rate can range from 0.1% to 4%.

9. Suitability for Expansion

9.1 Coal Coal reserves in the vicinity of the proposed site are estimated at 1.6 billion tons beneath a six township area. This is sufficient to supply seven commercial coal conversion plants, assuming 50% recovery of underground coal and 80% recovery of strippable coal. Most of this coal would be deep mined and could be conveyed to the conversion plant via conveyor belt.

Discussions with Peabody Coal Company have revealed they own vast amounts of uncommitted reserves in the site area. Peabody is willing to negotiate long term dedication rights with Coalcon.

9.2 Water The Kaskaskia River system, consisting of Carlyle and Shelbyville Reservoirs, Silver Creek and Shoal Creek is believed to be capable of providing more than adequate water for the consumptive needs of the Coalcon commercial plant and other consumptive uses projected to the year 2010. Reasonable estimates indicate a minimum quantity available for consumptive use below the Carlyle Reservoir to be 65 mgd.

In the unlikely event that even more water is required, additional quantities of water can be pumped to the site from the Mississippi River, utilizing the navigation channel of the Kaskaskia as a conduit.

9.3 Land Within the proposed site area approximately 2,000 acres of land are owned by the Peabody Coal Company. Peabody has offered to make the necessary land available on a reasonable and economically attractive basis. The State of Illinois owns another 2,200 acres, which borders both sides of the river, and will offer to lease any required land to Coalcon on a minimal cost basis. The remaining 400 acres are owned by a few private individuals. In the event this land is required, and cannot be obtained, the right of eminent domain could be used by the Illinois Department of Business and Economic Development to acquire the land.

In summary, the proposed site has more than sufficient land to meet the needs of the Coalcon commercial coal conversion plant.

9.4 Labor There is sufficient labor within the St. Louis major metropolitan area to construct and staff a commercial coal conversion plant. There is an existing construction force of more than 5,700, of which 27% were unemployed during 1974.

A labor force of more than 21,000 is currently employed in chemical and allied industries. Five major petrochemical industries in the St. Louis area would currently provide competition for the available skills. On the other hand, they also may be considered a pool of trained personnel. The St. Louis area tends to be a net exporter of labor. Projections indicate that the labor force in Madison, Monroe, and St. Clair Counties will increase by 43% by the year 2000.

The desirability of the St. Louis area with respect to job opportunities, living conditions, cost-of-living, etc., and the numerous trade schools, universities and other training facilities would indicate that this area could attract or train and supply the technical personnel necessary for the commercial plant.

9. Suitability for Expansion

9.5 Anticipated Industrial Growth

The factors that gave impetus to rapid industrial growth early in the century, such as proximity to St. Louis as a service center, the availability of good industrial land, and availability of major transportation facilities are expected to continue such growth in the future.

9.6 Anticipated Fuel Demand in Area

Fuel demands in the area are expected to increase primarily as a result of increasing demands by the large transportation industry and by continued growth in the many energy intensive industries in the St. Louis area.

Conclusion

The State of Illinois believes the site described in the preceding material is a unique combination of the physical requirements and site characteristics desired by Coalcon for their demonstration plant and potential commercial plant. The proposed site and the economic incentives offered by the State will be tremendous assets in assisting Coalcon to achieve their goal of demonstrating technical feasibility and economic viability of their coal conversion process.

The preceding descriptive material is a relatively brief condensation of a large amount of information and data compiled for this proposal. We urge Coalcon to contact the Division of Energy (BED) if there are additional questions or more information is needed. The Division will be pleased to make any data available that will assist Coalcon in their decision.

Appendices

Appendices

Appendix I

Letters and News Clipping Describing
Public Attitudes

VICTOR P. CANTY
CHAIRMAN

DIRECTOR OF
ADMINISTRATION
PHILLIP R. TAYLOR

BOARD SECRETARY
ALICE TRAUB

SUPERINTENDENT
OF HIGHWAYS
JAMES CONTRATTO

BOARD MEMBERS
District 1
LEROY ROBERTS
District 2
CHRISTOPHER WILLIAMS
District 3
CLARENCE ELLIS, SR.
District 4
FRED L. McDANIEL
District 5
LINDELL E. WILEY
District 6
OLIVER HENDRICKS
District 7
WELBON PHILLIPS
District 8
JOHN T. "JACK" ENGLISH
District 9
PAM KAEGEL
District 10
HENRY W. BLOME
District 11
ROBERT E. GLENN
District 12
WILLARD BARTHEL
District 13
CHARLES F. KNEEDLER
District 14
DANIEL N. CLOTFELTER, JR.
District 15
PAUL H. ABBETT
District 16
LAWRENCE E. "LARRY" MORTON
District 17
ALFRED N. YOUNG
District 18
JOHN L. ANHEUSER
District 19
WESLEY K. HERBSTREITH
District 20
JAMES A. STOKES
District 21
EUGENE H. CALVERT
District 22
GEORGE M. SCHLUETER
District 23
HENRY T. PITTS
District 24
FRANCIS TOUCHETTE
District 25
MICHAEL KING
District 26
ROD R. BROWN
District 27
VICTOR P. CANTY
District 28
NOMAN COX
District 29
PATRICK O. SULLIVAN

ST. CLAIR COUNTY BOARD
1 South Church • Room 207 • Belleville, Illinois 62220 • (618) 234-8329

June 3, 1975

Mr. Dean F. Whittaker
Division of Community Development
Department of Business and Economic
Development
SIU, Box 29
Edwardsville, Illinois 62025

Dear Mr. Whittaker:

I respectfully submit this letter to you as a supportive document for any activity which will provide industrial growth for St. Clair County, Illinois.

In my discussions with you relative to the possibility of a coal liquefication - gasification experimental facility to be located within St. Clair County with the additional possibility of expansion of this pilot project to a permanent operational facility, I would like to reiterate that as St. Clair County Board Chairman, I totally support this effort and do speak on behalf of my constituency for the entire county.

As you know, in 1974, previous County Board Chairman Francis Touchette attempted to bring about an experimental project within St. Clair County relative to coal gasification and liquefication. His attempts to do that at that time were thought to be premature and perhaps too innovative for success. However, the County Board of this County has felt very strongly that this type of industry would be best suited for St. Clair County, Illinois, in that we do offer the coal reserves necessary, as well as the tremendous volumes of water necessary to operate a facility of this kind.

Again, this letter is to let you know, and any others who may be interested, that we totally support the efforts of any industry to move into our area to operate such a plant, and we will do our utmost to provide some tax relief or other incentives as allowed by State law.

Sincerely,

Victor P. Canty

VICTOR P. CANTY, Chairman
St. Clair County Board

VPC:cmg

Appendix I

Phone: 452-1363

R. DRON ELECTRICAL COMPANY, INC.

STREET AND HIGHWAY LIGHTING

TRAFFIC SIGNALS

COMMERCIAL AND INDUSTRIAL WIRING

Engineers and Electrical Contractors

1818 Cleveland Boulevard
GRANITE CITY, ILLINOIS 62040
(Greater St. Louis Industrial District)

ELECTRICAL DISTRIBUTION AND SUB-STATIONS

MAINTENANCE AND MOTOR REPAIR

November 15, 1973

Tri-Cities Chamber of Commerce
1831 Delmar Avenue
Granite City, Illinois 62040

Gentlemen:

As part of the Tri-Cities construction industry, I would like to give my endorsement to the mutual-interest relationship that exists here today between industry, labor and contractors.

Dron Electric Company has been in the Tri-City area for 53 years and has never experienced a major labor problem. Our "no strike - no lockout" agreement has always resulted in bargaining table resolution whenever a problem arose, thus eliminating any work stoppages.

The geographical setting of the Tri-Cities offers the finest available in roadway, air and water transportation. This, coupled with a plentiful supply of skilled labor, makes the area an outstanding choice for industry.

Being an area of less than 60,000 population in three cities, gives us the advantage of small town friendliness for our families in dealings with schools, churches and local merchants. Yet, being a mere 15 minutes drive from downtown St. Louis, we are offered the large city advantages of major manufacturing, warehousing and transportation facilities, not to mention major league baseball, football, opera, symphony, shopping, etc., etc.

Have your potential businesses come visit us. We'll show them the "best of our two worlds".

Sincerely,

R. DRON ELECTRICAL CO., INC.

Wesley J. Lomax

Wesley J. Lomax, President

WJL/jmp

Appendix I

METRO EAST JOURNAL
12/6/73

Coal conversion plants coming–Rep. Gray

By Tony Canty
Metro-East Journal Staff

U.S Rep. Kenneth J. Gray, D-West Frankfort, said he feels sure Southern Illinois eventually will have several plants to convert coal to gas or oil.

The Department of Interior Coal Research Office has developed a plan for a $270 million demonstration plant that could be built in Southern Illinois. The office said Southern Illinois was picked as the theoretical site for purposes of developing the plan because Southern Illinois is considered a model area for a demonstration conversion plant.

Use of the plan depends on whether private interests accept it and are willing to finance about 50 per cent of the costs. Also, it is possible the plan would be accepted but that private interests would want the plant in other state, according to George Furnich, acting director of the Coal Research Office.

"Southern Illinois might not get the first plant but I am sure it will eventually get several and that won't be too far off," said Rep. Gray. "That can't help but happen. From Litchfield south there is more coal in Illinois than in any state in the country.

"The Southern Illinois coal has high sulphur content and it is possible the first plant might go somewhere where three is a good supply of low sulphur coal as the cost of processing such coal might be less. But there are 22 areas in Southern Illinois where the coal supply is sufficient to warrant such a plan. Those areas meet all the criterion necessary."

The congressman said that rather than coal companies he would expect the interest in fiancing such a plant would be found among utilities, which would be the largest customers for processed fuel.

Assured that they would have such customers, coal companies probably would be willing to invest their money as needed and that would be in developing new mines, Gray said. Most mines in Southern Illinois have contracted to sell just about all of the coal they can produce in the next 20 years, he added, and it has been estimated that each plant operated on a commercial basis would require two or three new mines.

Congressman Gray visualized a great increase in employment, not only through the plants themselves but because of the additional mines.

Gray believes that if enough interests decide they will back a plant in Illinois, coal companies might be inclined to divert some of their present production to such use.

Within a year or so, $2 to $3 billion will be available in federal funds for such plants, Gray said. "It is inevitable that Southern Illinois will get some of that."

"I am very optimistic that someone will be interested in the plan that has been developed," Furnich said. "It was set up so that anyone who was interested would have a rough draft."

Figures on how much employment would be involved in such a plant can only be roughly estimated. The Illinois Institute of Gas Technology has a pilot plant in Chicago. An institute spokesman said more than a hundred persons, mostly with high technical skill, are hired there, and it would take probably several hundred to operate a demonstration plant.

A pilot plant is used to test the theory involved. A demonstration plant is used to prove the process could be commercially feasible.

Furnich said a demonstration plant is much larger than a pilot plant and if successful, could, with some modifications, be taken over by private interests and operated on a commercial basis.

Furnich added that the closer the plant is to the source of coal the better its prospects for economic success. A gas institute spokesman said he believes a demonstration plant probably would be located right at a mine.

U. S. Rep. Melvin Price, D-East St. Louis, who announced development of plans for the plant, said he believes that because of the energy crisis, more than one plant should be developed from the start so that time will be saved if one particular plan at a particular site provse unfeasible.

According to Price, the conversion of coal to gas and oil holds great promise in meeting the energy crisis. About $10 billion will be spent by the federal government in the next five years on research and development in attempting to meet the crisis and Price feels that about $1 billion of that should be spent annually on coal research.

Appendix I

May 29, 1975

Southwestern Illinois Metropolitan
and Regional Planning Commission
203 West Main Street
Collinsville, IL 62234

Gentlemen:

The community of New Athens, Illinois is very interested in the continued development of the coal industry in our area. Coal represents an important component of the area's economy. The community welcomes the possibility of a coal gasification/ liquefaction plant in our area. Such a plant would be a valuable asset to the area's economic growth and employment opportunities.

Sincerely,

John A. Behnken
President
Village of New Athens

Appendix I

KIDC KASKASKIA INDUSTRIAL DEVELOPMENT CORPORATION

May 31, 1975

To U. S. A. Industrialists:

We, of the KIDC, are anxious to work with those who are interested in placing a coal to gas conversion plant along the Kaskaskia river area.

There are sites here at New Athens which are level and ideal for a conversion plant location.

Coal is available in the billions of tons, and water from the Kaskaskia river is abundant, and if need be, could be replaced by water from the Mississippi.

Kindly call on this office for help, if needed, in locating your plant.

Sincerely,

A. A. WILSON

AAW:blm

KIDC BOARD CHAIRMAN

110 North Van Buren New Athens, Illinois 62264 (618) 475-2530

Appendix I

UNITED ASSOCIATION
of
PLUMBERS AND GAS FITTERS --- LOCAL 360
EAST ST. LOUIS, ILLINOIS 62205

R. KELLY, SECRETARY
PHONE: OFFICE 874-3871

MEETINGS
FIRST & THIRD WEDNESDAY EACH MONTH
650 NORTH 20TH STREET
EAST ST. LOUIS, ILLINOIS 62205

September 7, 1973

Tri-Cities Area Chamber of Commerce
1831 Delmar Avenue
Granite City, Illinois 62040

Gentlemen:

The outstanding growth of this industrialized area over a long period of time is the direct result of many factors, but above all, it can be attributed to the dedication, cooperation, mutual understanding and respect that industry and labor have had for each other. After all, it is people that get things done, and cooperation is the only way to do it.

Our location is entirely favorable. We are fortunate to be located near the center of population of the United States -- good river and rail transporation --close proximity to airports - plenty of truck terminals - and above all a good highway system. All of these things are essential to growth.

In spite of all these favorable conditions, we do not believe we have had our share of new industry in this area during the past few years. We do not know exactly why that is, but we can assure anyone interested that this union is ready and willing to cooperate in any way we can to encourage new industry to settle here and continue the good growth we have had in the past. If there is a problem, we are always ready and willing to sit down with interested people to discuss it and work out a solution.

Naturally, new industry will go where it is invited and properly treated by City, County, State government and, of course, by labor. Obviously, industry must employ labor and we assure you we furnish skilled, cooperative, productive labor from our organization who are willing to work and give a good eight-hours work for eight hours pay.

This union has never fostered or approved of wildcat strikes, work stoppages, etc.. Rather, when a grievance occurs we want it arbitrated and solved at the proper level while work continues. We feel that we have been cooperative in the past, and we assure you we want that to continue.

It seems to us that your Chamber of Commerce could be instrumental in inviting and encouraging new industry to locate in this area, and if we can help you in any way, please do not hesitate to call on us.

Sincerely,

Richard Kelly
Business Manager

Appendix I

STATE BANK
OF NEW ATHENS

RICHARD E. ZEMENICK
PRESIDENT

To Whom It May Concern:

The State Bank of New Athens, a full-service bank, is dedicated to progressive industrial growth in our area. We would be delighted to offer our many services to assist any future industrial projects in our area.

Located on the banks of the navigable Kaskaskia River, and surrounded by an abundant supply of coal, we believe New Athens would be a natural for an energy conversion plant.

If the State Bank of New Athens or I can be of any assistance, please feel free to call at your convenience.

Sincerely,

Richard E. Zemenick
President

May 30, 1975

REZ:jt

New Athens, Illinois 62264 (618) 475-2155

Appendix I

Granite City Press-Record
Monday, December 31, 1973

Gasification big hope for vast Illinois coal reserve

There's coal in them thar hills and dales and valleys and plains and ..

With the energy depression upon us, that's pretty important. Especially in Illinois, the nation's fourth largest producer of coal.

And the state also sits on the largest coal reserve in the country. Dirty burning high-sulfur reserves, that is. And that's the problem.

Less than one per cent of the estimated 193.7 billion tons of coal resting in Illinois' depths is low in sulfur content. And you can't recklessly burn the high-sulfur coal, according to Illinois laws.

In essence, the laws prevent the burning of high sulfur coal unless dust and sulfur fumes from it are controlled.

Rep Richard Hart, D-Benton, introduced a House bill which he said was designed to protect the Illinois coal industry "from extinction" through present regulations adopted by the Pollution Control Board.

Hart's bill, later vetoed by Gov. Daniel Walker, would have stayed the PCB's rule which would require commercially available sulfur dioxide removal equipment by May, 1975.

So, coal remains the largest untapped source of energy in the United States.

"Coal is the most efficient fuel to burn for steam production," explained Russell T. Dawe, director of the Illinois Department of Mines and Minerals. "We are trying to get all we can out of what coal we have."

A new process for reducing air pollution potential from many bituminous coals is in the testing stage. The Bureau of Mines in Washington recently announced the process, which removes pyritic sulfur — a major pollutant — from the coal before it is burned.

Coal remains a way of life for 11,000-plus Illinoisans. Last year, they mined 65 million tons of coal valued at $455 million taken from 59 mines. About half of the coal mined here goes to Florida, Indiana, Iowa and Wisconsin.

It costs $20 million to $50 million to sink a mine, according to Dawe. In addition, it takes three to five years to put one in full production. At present, there are two new mines in the state gearing up for full production.

However, all is not lost for "King Coal." Help is on the way in the form of coal gasification.

A process whereby low grade coal is converted into natural gas and fuel oil, gasification could be a reality by as early as 1977, according to Democratic Congressman Melvin Price. And all signs point to Illinois as a plant locale.

At the present time, the Department of the Interior's coal research office is considering Southern Illinois as one of a number of sites for construction of a $270 million demonstration coal gasification and liquification plant. Other states, such as Kentucky and West Virginia, are challenging Illinois.

"I think Illinois is the best location for a gasification plant," Dawes said. "We have the necessary reserves as well as the water supply that is necessary."

Another important Illinois asset is the fact that many of the nation's major gas pipelines cross the state.

The plant may be seen as an "economic boon" to the first state acquiring it.

According to a study compiled by the Institute of Gas Technology in Chicago, each plant and associated mine could provide jobs for 1,600 people, plus an additional 1,000 jobs created in communities surrounding it.

Each plant could result in an area investment approaching $115 million, and $21 million per year in personal income will be generated by each plant.

Appendix I

Collinsville Herald
Monday, May 20, 1974

Mel Price pushes coal gasification

Representative Melvin Price, Dean of the Illinois congressional delegation, sponsored a meeting of the delegation on Wednesday, May 15, for the purpose of discussing the important role the State of Illinois will play in developing energy self-sufficiency in the United States. Speaking at the meeting were Jack Huebler and Thomas J. Joyce, Senior Vice-President and Consultant, respectively, of the Chicago-based Institute of Gas Technology.

At the meeting, the Institute reported that it has developed a near-commercial process to convert domestic coals to clean utility and industrial fuel gas. Known as low BTU gas, it can be an important component of the future domestic synthetic fuel industry. Such fuels will complement, but not replace, needed accelerated development of nuclear energy, synthetic natural gas production from coal, oil, or oil shale, and other supplemental energy development programs.

According to Rep. Price, the low BTU gas produced by the new process can be used in existing electric power plants in the near future and new high efficiency, combined cycle plants by 1980. Industry will also benefit from large, energy-intensive manufacturing plants establishing coal-based energy self-sufficiency for process fuel, steam, and on-site power.

The Institute of Gas Technology is currently operating a low btu gasifier unit in Chicago which confirms design criteria for a proposed demonstration-scale coal conversion plant. Such capabilities, combined with the Commonwealth Edison low BTU gas program and the Northern Illinois Gas Company-State of Illinois combined coal liquefaction-gasification effort, would potentially provide Illinois with a complete coal conversion program unequalled in any other state.

Rep. Price reported also that the Office of Coal Research of the U.S. Department of the Interior is preparing to select one of five possible national sites for undertaking a detailed environmental-economic impact analysis of a coal conversion facility on the chosen site. One of the five sites under consideration includes Washington, Williamson, Perry, and St. Clair Counties. Congressman Price is hopeful that this Illinois site will be chosen because of the natural coal resource capacity and so that Illinois will continue to be the key state in the effort toward national energy self-sufficiency.

Congressman Price, who is Chairman of the Joint Committee on Atomic Energy, is enthusiastic about Illinois' future in energy matters, for the development of low BTU gas from coal will reverse the trend toward the use of imported, low-sulfur coal within Illinois for power generation, provide the basis for early growth of the Illinois coal industry and the downstate economy, preserve the export market for Illinois high-sulfur coal to neighboring midwestern states, provide incentive for new energy-intensive industry to develop in southern and central Illinois.

Appendix II

U of C-AUA-USAEC

Office of Coal Programs

ARGONNE NATIONAL LABORATORY

June 12, 1975

Mr. Peter Loquercio, Deputy Director
Institute for Environmental Quality
State of Illinois
309 West Washington Street
Chicago, Illinois 60606

Dear Mr. Loquercio:

It has come to our attention that the Illinois Institute for Environmental Quality is participating in a program to determine the feasibility of locating a coal gasification facility in South Central Illinois. We are extremely interested in obtaining information regarding this project because it relates directly to one of our Energy Research and Development Administration's research and analysis programs in our Energy and Environmental Systems Division.

Our interests focus on identifying the health, environmental, economic, and social impacts of siting large energy conversion facilities. We have currently established two case study sites, one in the Williston Basin (North Dakota) and the other in the Black Mesa/San Juan area (Four Corners region), and are in the process of identifying a potential site in the Midwest for an additional case study.

Your Coalcon Project would provide our researchers with an excellent opportunity to provide a cooperative research effort in the Midwest. We would, therefore, be interested in obtaining from you any preliminary information you have regarding this project, and would be very interested in entering into discussions to determine if our efforts can be coordinated.

Sincerely,

Ralph P. Carter, Director
Coal Extraction and Reclamation Programs
Energy and Environmental Systems Division

RPC/jl

9700 South Cass Avenue, Argonne, Illinois 60439 · Telephone 312-739-7711 · TWX 910-258-3285 · WUX LB, Argonne, Illinois

NOTES ON SITE REQUIREMENTS

1) Assured availability of coal at predictable prices will be required to confirm the economic viability of commercial coal liquefaction plants. This factor will be given high priority in the site evaluation process.

2) The ideal site would be adjacent to the coal mine, water source, product pipelines, and rail transport. If these requirements are located at a distance, please describe the intervening land and the means of assuring access to these raw materials and distribution facilities.

3) A thorough and detailed description of the proposed site is required, including aerial photographs and prints showing area, topography, physical characteristics and number of ownerships. Also the land should be optioned or otherwise secured to assure availability at reasonable cost throughout the evaluation period.

4) Expansion of the demonstration plant to a commercial facility is the objective of the public and private participants in this program. While this is beyond the scope of the present contract, and is therefore not mandatory, additional consideration will be given to those candidate sites which satisfy those longer term requirements.

use number in report to Rusin

SITE REQUIREMENTS

1.0 Raw Materials

1.1 Coal

1.1.1 Type/Seam (Pittsburgh No. 8 or equiv.)

1.1.2 Quantity Demo Plant - 2750 Tons/Day
18.5MM Tons/20 Years (0.9MM Tons/Yr.)

Commercial Plant - 16500 Tons/Day
(5 x scale-up) 110MM Tons/20 Yrs. (5.5MM Tons/Yr.)

1.1.3 Quality

	Run of Mine	Washed (10% Ash)	M.A.F.
Volatiles (%)			
Fixed Carbon (%)			
Ash (%)			
Moisture (%)			
H_2 (%)			
C (%)			
N_2 (%)			
O_2 (%)			
S (%)			
BTU/LB.			
Ash Fusion Temp.			
Trace Elements Present (Lead, Cadmium, Fluorides, etc.)			

1.1.4 Supplier

Sid Harder

Source
Proximity (Site at mine mouth preferred)
Means of Delivery to Plant (Conveyor Preferred)
Alternate Source (back-up)
Strip or Deep Mine (Relative Cost?)
Existing Mine or New Mine (Existing Preferred))

A.M. Fazzari 4/28/75

1.1.5 Cost - Delivered (Run of Mine and Washed to 10% Ash)
- Commitment on quantity, price, term of contract

1.1.6 Disposal of Ash & Sludge in Mine - feasibility, cost, environmental impact

1.2 Water

1.2.1 Quantity: Demo Plant = 2400 gal/min.; Commercial = 14,500 gal/min. Consumed / Intake
" " 3000 " " ; " 18,000 " " "
Capacity of River or Reservoir
Seasonal Variation in Capacity
20 Year variation limits in capacity, trends, if any
Proximity to Plant (Direct access required)
Availability: Controller, Permits, Access

1.2.2 Quality

pH
Hardness
Contaminants
- Organic
- Inorganic

Temperature
Variation: Seasonal and 20 yr. extremes and trends

1.2.3 Limitations on USE

Major Pollutants and Sources (What is Upstream)
Rating vs. EPA Limits (Present & Future)
Limitations on Use (Present & Proposed)
Limitations on Effluent (Present & Proposed) Contaminants, Temperature
Downstream Public Water intakes (What is Downstream)

Use & Discharge Permits Required

1.2.4 Costs

DOW

Water Use
Permits (Use & Discharge)
Other

1.3 Power: Demo Plant 5 Megawatts; Commercial Plant 20 Megawatts

Ill. Comm Commission

1.3.1 Supplier

1.3.2 Service: Reserve Capacity
Interruptable?
Recent Performance Problems
Fuel used to generate

1.3.3 Cost: Connection (Power to Site)
Use Charge
Demand Charge

1.3.4 Proximity:
Voltage at nearest connection point
Distance

1.4 Contract Services

Proximity and Number
Machine Shops
Equipment Repair
Electrical/Electronic
Pipefitters

BED

Sheet Metal
Graphics
Cafeteria/food service
Janitorial
Refuse Collection
Contractors
Supply Vendors (Maint. & Oper. Supplies)
Sewerage Disposal
Security Service

1.5 Communications

Telephone Service - Company, Capacity, present service load
Telex/Teletype

2. Labor

2.1 Construction Labor: Demo Plant 1000 Men at Peak (Carpenters, Electricians, Pipe Fitters, Ironworkers, etc.)

2.1.1 Crafts and Numbers Available

2.1.2 Proximity to Plant Site

2.1.3 Union Representation

2.1.4 Wage Rates

2.1.5 Unemployment Rate and Trend, incl. seasonal effects

2.1.6 Competition by other planned facilities

2.1.7 Minority Representation

2.2 Operating Personnel(incl. Management) - Demo Plant: Manag't & Supervisory 40
Technical & Support 100
Operators 120

Commercial Plant Requirements are double.

2.2.1 Skills and Numbers Available - Proximity

2.2.2 Unemployment rate, trends, seasonal factors

2.2.3 Competition - existing and projected major employers

2.2.4 Wages Rates & Employee Benefits (incl. Average work week, holidays, etc.)

2.2.5 Union Climate (Type, leadership, past practices, strike time lost (past 5 yrs.)
(Union and Community attitudes, union militancy)

2.2.6 Trade Schools in area - Type, size, proximity, quality

2.2.7 Labor Relations Climate (Labor Peace, turnover, productivity, absenteeism)

2.2.8 EEO Considerations (Minorities, skill levels, community attitudes, pressure groups)

2.3 Maintenance Personnel - Demo Plant 80 (Primarily mechanics, electricians, instrument men)
- Commercial Plant 200 " " " " "

2.3.1 Crafts and Numbers Available - Proximity

2.3.2 Unemployment rate, trends, seasonal factors

2.3.3 Competition - existing and projected major employers

2.3.4 Wage rates and employee benefits

2.3.5 Union Climate (Type; leadership; past practices, strike time lost; militancy; union, employee, and community attitudes)

2.3.6 Trade Schools and Apprentice Programs in Area - Type, Quality

2.4 Professional Personnel

2.4.1 Availability in Area

2.4.2 Salary Rates and Benefits

2.4.3 Universities; Colleges

2.4.4 Competition in Area

2.4.5 Life Style/Attractiveness of Area

3.0 Land : Demo Plant - 700 Acres; Commercial Plant - 1000 Acres

3.1 Area and Dimensions

3.2 Topography

ISGS ✓ Slope; elevation
Drainage Risk of flooding — DOW
ISGS ✓ Clearing/Grading Requirements

3.3 Current Land Use

3.4 Title; Ownership, Easements

3.5 Cost (incl. surveys, assessments, etc.)

3.6 Surroundings

Distance and Direction from Committed Coal
Distance and Direction from Water
Distance and Direction from Population Centers
Distance and Direction from Railroad, highway, pipeline, barge
Current land use in area
Immediate neighbors

SWIMPAC 3.7 Zoning, Restrictions on land use (Site and Area)

3.8 Geology

ISGS Bedrock surface
WCPP KE Soil structure and load bearing characteristics
~~Depth to~~ ground water condition

3.9 Rights of Way to Water, Coal, Railroads, Product Pipelines

4.0 Transportation/Distribution

4.1 Airlines (Commercial Airport less than 1 1/2 hrs. drive)

Proximity and Quality of Airport
Airlines Providing Service
Flight Frequency; Schedule Convenience; Reliability

4.2 Railroad

DOT

Proximity to Main Line
Spur and Siding - Capacity and Location
  Existing
  Cost if required
Companies Servicing Area
Frequency of Service
Quality of Service
Quality of Physical facilities (Track, rolling stock)
Regulations/Restrictions (Size, weight, type of freight)
Rates for Oil, Coal, Sulfur, Ammonia
Switching Service

4.3 Highways

Proximity of interstate access
Quality of connecting roads
Local roads - quality, traffic, ability to handle personnel and freight
Companies servicing area (local, interstate)
Regulations/Restrictions on use (weight, height, length, type of freight)
Rate Structure (Coal, oil sulfur, ammonia, ash)
Nearest Mass Transit to Site area from Population Centers

4.4 Access Roads to Site

Distance to existing quality road
Installation and maintenance of access road, if required

4.5 Pipelines

Gas - Interstate or Intrastate, size, capacity, ownership, pressure, ability to tap, proximity
Oil - " " " " " " " " "
Other

4.6 Barge Service

SWIMPAC

Proximity
Channel Depth and Width,
Restrictions on Use
Service
Fleeting Area

4.7 Optimum Distribution Channels and Cost - probable shipping Mode and Markets

Swimpac

Liquid Fuel
SNG
Sulfur
Ammonia
Ash

5 Environment

5.1 Federal, State and Local Agencies; Present and Projected Standards and Requirements

5.1.1 Water Quality	Current Level, Legal Limit, Historical Records Intake and Discharge Permits Required Aquifer location and succeptibility to contamination Water sources in Area (Rivers, Streams, Lakes, Marshes)
5.1.2 Air Quality	Current Level, Legal Limit, Historical Records Permits Required
5.1.3 Particulates	Specific Regulations and Considerations; Current level
5.1.4 Noise	Specific Regulations and Considerations
5.1.5 Waste Disposal	Landfills Return to Mine Contract Services
5.1.6 Sewerage Disposal	Septic Systems Municipal Sewerage Service Discharge Requirements
5.1.7 Agency Jurisdiction	Regional EPA, Corps of Engineers, Air Pollution & Water Authorities, etc.

5.2 Weather

5.2.1 Temperature Variations	Average and Range (Monthly and 20 yr. extremes)
5.2.2 Rainfalls/Snowfall Variations	Average and Range (Monthly and 20 yr. extremes)
5.2.3 Humidity Variations	Average and Range (Monthly and 20 yr. extremes)
5.2.4 Violent Storms	Type, Frequency, Historical Records
5.2.5 Earthquakes, Floods, etc.	---

5.3 Quality of Life

5.3.1 General Appeal of Area
Use of Surrounding Land and Region
Life Style
Location and Description of Population Centers
" " " " Shopping Centers
Recreation Areas
Cultural Events
Higher Education
Churches
Restaurants/Entertainment

5.3.2 Quality and Capacity of School Systems

5.3.3 Availability and Cost of Housing, Building Activity; Financing
5.3.4 Crime, Civil Unrest
5.3.5 Demographic Profile (Age, Minorities, etc.)
5.3.6 Cost of Living

5.4 Community Services (Names, Location, Service Capacity, Cost)
Medical-Doctors, Clinics, Hospitals
Police - Size of Force; Patrols, Quality
Fire (Volunteer of Professional, time to respond to site)
Utilities - Water, Gas, Electric Sewerage, telephone

5.5 Active Environmental Groups, Community Attitudes, Corporation with Industry

5.6 Current Pollution/Environmental Problems

5.7 Undesirable Site Features
Historical or Archeological Significance
Endangered Plant or Animal Species
Destruction of Park Plant Recreational Facilities, etc.

6 Business Climate

6.1 Taxes - Municipality, County and State (Current and Five year trend, Projection)

Business Taxes

- Real Estate•Property - Rate per assessed Valve, Rate per square foot, basis for Assessed Valve.
- Inventory Tax - Rate, Assessment Rate, restrictions, exemptions
- Payroll/Occupation Tax
- Sales Tax
- Income/Profits Tax
- Franchise/Filing Fee
- Fuel Taxes
- Value Added Tax
- School Taxes - if separate
- Other

Personal Taxes

- Real Estate Tax - Rate and Basis for Assessment
- Income Tax
- Sales Tax
- Personal Property Tax
- School Taxes (If separate)
- Other

Apportioning of Tax Load (Industrial, Commercial, Real Estate, Personal)

Tax Incentives/Relief Available

6.2 Zoning - Site and Area (Master Plan, if available)

Limitations on construction/Operation of Plant

6.3 Building Codes/Labor Laws

6.4 Community Attitudes towards Industry(Chemical Processing and Coal)

- Population
- Community Leaders
- Media
- Community/Industry Relations

6. Business Climate (Continued)

6.4 Community Attitudes (Continued)
Major Industries/Employers in Area
Stability-Political, financial, union activities
Public and Private Financing
Industries entering and leaving area (Past five years, future projection)

7. Legal

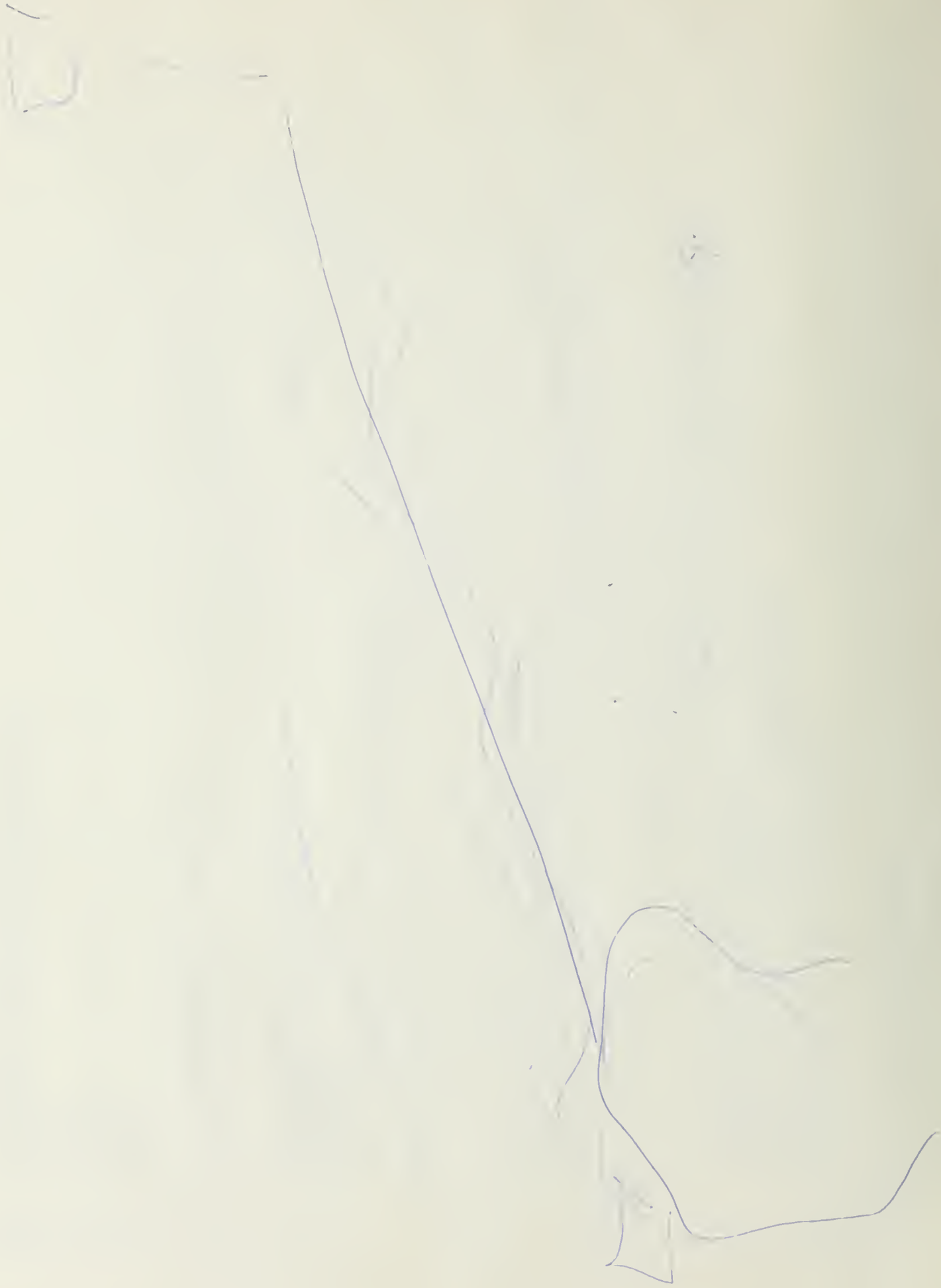
Review State, local, federal Laws and Ordinances (Labor Laws, Incorporation, use of resources)
Review Property Title, encumberances, etc.
Review Leases, Contracts, Agreements

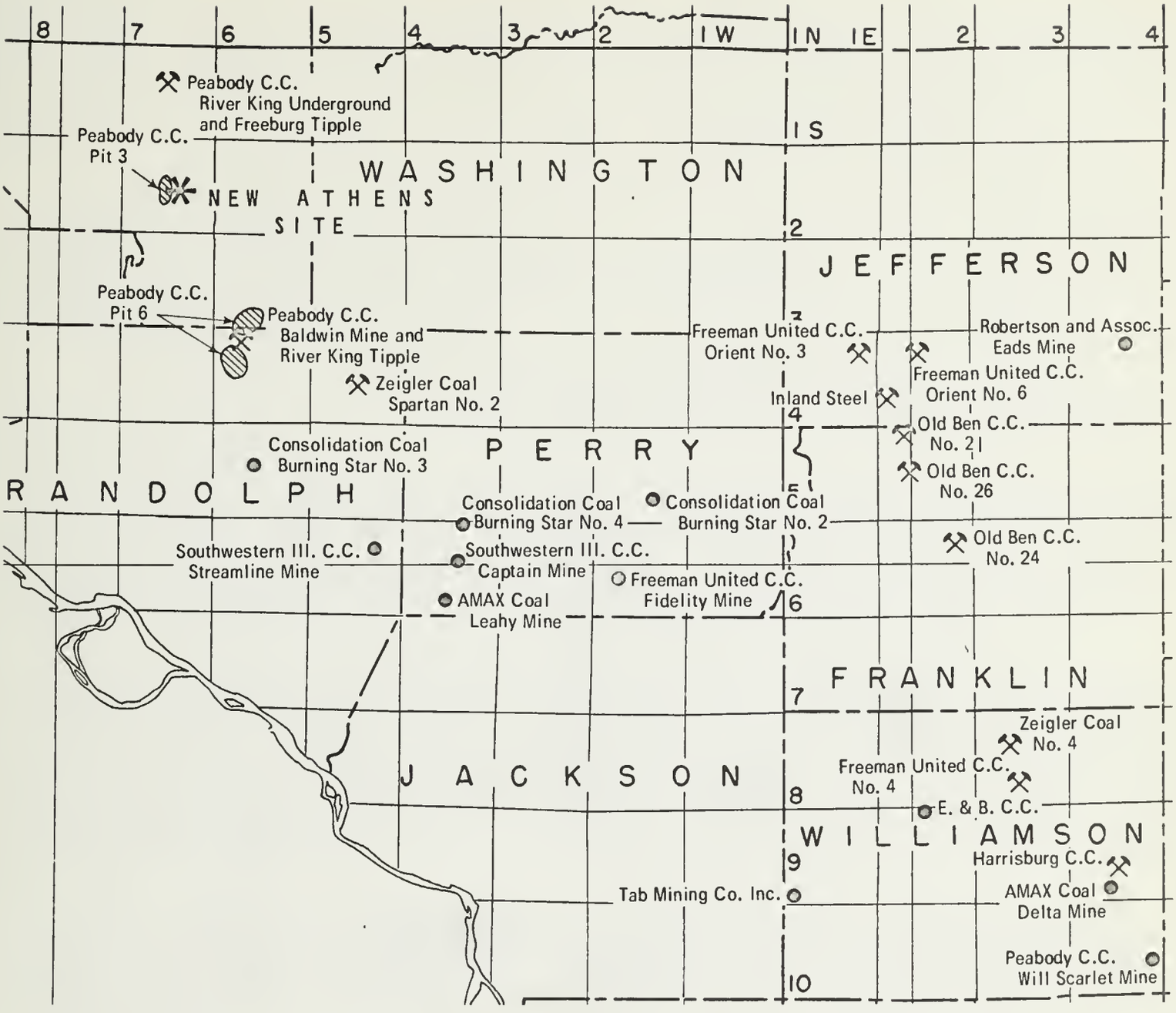
8. Insurance Coverage and Rates

Fire & Extended Coverage (Inc. Explosion)
Liability
Workman's Compensation
State Unemployment Insurance

9. Suitability for Expansion (Summary)

9.1 Coal
9.2 Water
9.3 Land
9.4 Labor
9.5 Anticipated Industrial Growth in Area
9.6 Anticipated Fuel Demand in Area





ACTIVE MINES
SOUTHWESTERN AND SOUTHERN ILLINOIS
JUNE 1975

- Underground mine
- Strip mine
- Peabody Coal Co. River King pits

0 10 20 30 40 Miles

Illinois State Geological Survey - June 1975

ILLINOIS INDUSTRIAL

POLLUTION CONTROL FINANCING AUTHORITY

ROOM 814, 100 NORTH LA SALLE STREET

CHICAGO, ILLINOIS 60602: (312) 793-5586

June 17, 1975

Mr. Sidney Marder
Director of the Energy Division
Department of Business & Economic Development
222 S. College
Springfield, Illinois 62706

Re: CoalCon Conversion Demonstration Project

Dear Mr. Marder:

The Illinois Industrial Pollution Control Financing Authority has been notified that your agency is making a site selection proposal to CoalCon for the location of a coal conversion facility in Illinois. The Authority recognizes the desirability of such facilities, and we therefore wish to inform you of the following:

1. The Authority is created under and authorized by the Illinois Industrial Pollution Control Financing Act, Illinois Revised Statutes, 1973, Ch. 127, Section 721, et seq., to issue revenue bonds for the purpose of financing pollution control facilities: said bonds are not the liability of the State of Illinois or any political subdivision there of, but are payable by the entity entitled to receive revenues from such facilities.

2. The Authority is empowered to issue revenue bonds up to an aggregate total of $250,000,000 for the purpose of financing such pollution control facilities. Legislation now pending before the Illinois General Assembly would increase that amount by an additional $250,000,000.

Providing that the site selected by CoalCon is in the state of Illinois, the Authority hereby expresses its intent to act promptly on an application for financing of those portions of the plant which constitute pollution control facilities under the Federal IRS rules and regulations which govern our ability to issue revenue bonds.

Please contact us if we can be of further assistance.

Sincerely,

Susan Wolfe
Executive Director

SW/nm

IIPCFA

ILLINOIS INDUSTRIAL
POLLUTION CONTROL FINANCING AUTHORITY
ROOM 814, 100 NORTH LA SALLE STREET
CHICAGO, ILLINOIS 60602: (312) 793-5586

DESCRIPTION OF IIPCFA METHOD OF FINANCING

The Method of Financing

The IIPCFA provides financing for pollution control equipment for various entities by issuing pollution control revenue bonds, the interest on which is exempt from Federal income taxation. With the proceeds of these bonds the Authority acquires pollution control facilities and then leases or sells them to the company. The lease payments continue until the bonds have been retired, at which time title to the pollution control facility is conveyed to the company.

The company on whose behalf the bonds are issued bears total responsibility for all principal and interest payments on the bonds. The Authority's function is to make the bonds tax-exempt; this enables the company to pay a lower interest rate while the bonds are outstanding. This, when combined with the benefit of long-term financing, results in savings of as much as 50% of the total cost of the pollution control equipment. Neither the Authority nor the State of Illinois is in any way responsible for payment of the bonds. Since the Authority is totally self-sustaining with no tax monies appropriated for its oper-

ations, financing is accomplished completely without cost to Illinois citizens.

Medhod of Application, and Criteria by which Applications are Judged

The Illinois General Assembly has authorized the IIPCFA to issue $250 million of pollution control revenue bonds; of that amount $75 million is allocated to small businesses as defined by the SBA. The three Authority Members appointed by Governor Walker are responsible for selecting for financing those facilities which will promote the health and welfare of Illinois citizens.

Any company is eligible to apply to the Authority for pollution control financing for its Illinois-based plants. Pollution means any form of environmental pollution including water, air, land, solid waste, thermal, radiation or noise pollution as prescribed by State and Federal agencies. An application to the Authority must provide a detailed description of the pollution to be controlled and the facility to be financed, along with reports of all litigation or administrative action by environmental agencies with regard to the pollution, and complete financial data on the company. The application is accompanied by a fee of up to $500 to cover the cost of review.

Every application is sent to the IEPA for review by their

engineering staff of the quality of the facility and the facility's ability to meet all appropriate State and Federal regulations. The financial data is reviewed to assess the company's ability to repay the bonds. In addition to these considerations, the Authority has taken the position that whenever possible, given the benefits of Authority financing to the company, the facilities financed should in some way result in increased environmental protection for Illinois citizens. Among the possible means of achieving this additional protection are: a) installation of facilities which exceed all applicable standards; b) an accelerated installation schedule; and c) the investment of some portion of the savings in further pollution abatement at another Illinois location. (For small businesses and agriculture, maintenance of a viable industry is considered sufficient added benefit.) The Authority also requires the company to meet or exceed all appropriate regulations for as long as the bonds remain outstanding.

At the time of issuance, the company pays to the Authority an additional fee of 1/5 of 1% of the amount of the bond issue to be used by the Authority for operating expenses.

Note: For at least the first Agriculture Application, the Authority has established a one-time fee of $200 to cover all of the Authority's cost of review and issuance, including all of the Authority's legal expenses. This figure represents a significant subsidy on the part of the Authority, which we feel is justified by the importance of making our financing available to small as well as large enterprises. However, this fee is subject to change, and applicants should contact the Authority's office before making formal application.

Response to COALCON Questions
Submitted by R. N. Saleeby in letter of June 23, 1975 to S. Marder

Prepared by Illinois State Geological Survey
July 8, 1975

Question Number

(3) Enclosed are copies of the following geological reports pertinent to the site:

(a) Cooperative Resources Report 4 of Illinois State Water Survey and Illinois State Geological Survey: Coal and Water Resources for Coal Conversion in Illinois, 1975.

(b) Illinois State Geological Survey Circulars:

*225 - Groundwater Geology in South-Central Illinois, 1957.

*260 - Strippable Coal Reserves of Illinois: Part 2, 1958.

284 - Salem Limestone in Southwestern Illinois, 1960.

346 - Limestone Resources of the Lower Kaskaskia Valley, 1963.

465 - Geology for Planning in St. Clair County, Illinois, 1971.

(4) Enclosed are copies of several foundation boring logs made in connection with the new bridges to be built over the Kaskaskia for State Highway 13 and the Illinois Gulf Central Railroad, located at New Athens, plus several logs of deeper tests drilled in the general area, primarily for either oil or water. Some engineering data are given for the unconsolidated sediments lying above bedrock. Logs of coal tests drilled by Peabody Coal Company for Pit 3 exploration were given to Dr. Sowers at Peabody's Pit 3 office during the COALCON site inspection, July 2, 1975.

Several years ago members of the Illinois State Geological Survey ran a few seismic refraction profiles across some spoil piles in Sections 11 and 13 and 14 of T. 1 S., R. 8 W., in St. Clair County, for the purpose of discerning the elevation of the water table under the spoil. Because of the roughness of the terrain and inhomogeneities of the near surface materials, this problem could not be resolved. However, based on this small amount of work it is believed that good seismic velocity data, which could be related to engineering properties of the spoil piles, could be obtained. Drilling and subsequent testing would ultimately have to be done, but as a start this kind of reconnaissance might be worth attempting.

* These reports are out-of-print and the enclosed copies are from the Illinois State Geological Survey vault supply. These copies should be returned to the Illinois State Geological Survey, Urbana, Illinois 61801, when no longer needed.

Question Number

(5) We are not aware of any studies made on foundation performance of either uncompacted or compacted strip mine spoils similar to the material on site.

(6) Specific seismic design criteria that formerly have been used for industrial plants in this southern Illinois area are not known to the Illinois State Geological Survey.

(7) The percentage of additional cost required to build in this seismic region vs. a non-seismic region is not known to the Illinois State Geological Survey.

(8) Details of the study that provide the design earthquakes, estimated Modified Mercalli intensity, acceleration and return frequency of magnitudes, and corresponding intensities for the site are given in the following reports:

Nuttli, O. W., 1973, Design Earthquakes for the Central United States. Prepared for Army Engineer Waterways Experiment Station: National Technical Information Service, U. S. Department of Commerce, Report AD-756-447.

Nuttli, O. W., 1974, Magnitude-Recurrence Relation for Central Mississippi Valley Earthquakes: Seismological Society of America Bulletin, v. 64, no. 4, p. 1189-1207.

A comment about the return frequency of magnitudes and intensities for the New Athens site is in order. Nuttli's recurrence relation deals with earthquakes over a large region that includes several smaller seismic provinces. We know seismic activity is not uniform over this large region, so the recurrence relation for the smaller seismic province in which the New Athens site is located may differ slightly from that given for the large region.

(15) Illinois State Geological Survey Circulars 225 and 465 (see Question 3) contain data on ground water in this area. We understand that the Illinois State Water Survey is providing information on quality of ground water.

(18) There has been some underground mining of the Herrin (No. 6) Coal, which is now being stripped in Peabody Coal Company River King Mine, Pit 3, as shown on the enclosed portion of our Mined-Out Area Map 27. In the strip mining operation in Pit 3, Peabody Coal Company avoided the old underground mine and simply mined around it. Other underground mines in this coal operated both immediately south of and some distance north of Pit 3. No underground mines are now active in the immediate area. The nearest is Peabody's River King Underground, located about 7 miles to the north-northwest. Reserves that will be mined underground in the future lie east and north of the site.

There are several coal horizons both above and below the Herrin (No. 6) Coal, but none of these is known to attain minable thickness in this part of the state.

Question Number

(18,a) See Question 22 relative to oil and gas activity and enclosed Oil and Gas Development Map (Marissa).

(22) Two small gas storage projects are near the New Athens-Fayetteville site area: Freeburg and Tilden. Both are operated by Illinois Power Company.

The Freeburg project is in Sec. 1, T. 2 S., R. 7 W., St. Clair County. 83 injection-withdrawal wells and 7 observation wells are used. Gas is stored in the Cypress Sandstone (Mississippian) in an old gas field at a depth of 350 feet. The storage area covers 4222 acres. Total capacity is 6.8 billion cubic feet.

The Tilden gas storage project is in T. 3 S., R. 5 and 6 W., St. Clair and Washington Counties. 45 injection-withdrawal wells and 15 observation wells are used. Gas is stored in the Cypress (Mississippian) at a depth of 800 feet. The storage area covers 1287 acres. Total capacity is 3.1 billion cubic feet.

Oil is produced at Tilden Field, T. 4 S., R. 5 W., in Randolph County. 32 wells were producing January 1, 1974, from the Silurian at a depth of 2160 feet, over an area of 610 acres. Cumulative production (January 1, 1974) was 4,206,000 barrels. Production during 1973 was 76,000 barrels. Oil is also produced at Tilden North Field, T. 3 S., R. 5 and 6 W., in St. Clair and Washington Counties. 14 wells were producing January 1, 1974, from the Silurian at a depth of 2014 feet, over an area of 190 acres. Cumulative production (January 1, 1974) was 600,000 barrels. Production during 1973 was 48,000 barrels.

In the area shown on the New Athens-Fayetteville site map, figure 3.2-1 of the Illinois formal document, covering portions of T. 2 S., R. 6 and 7 W., St. Clair County, a number of wells have been drilled to depths less than 1000 feet; only one well has gone deeper than 2000 feet, according to our records.

The deep well, No. 1 Linss, was drilled at SW SE SE Sec. 11, T. 2 S., R. 7 W., in 1966. The top of the Trenton Limestone (Ordovician) was 2133 feet. The top of the Silurian dolomite was 1607 feet.

There are no oil wells in T. 2 S., R. 6 W., or 7 W. The nearest oil production is at Tilden North Field in Sec. 36, T. 3 S., R. 6 W. The shallow wells that were drilled since the discovery of the old Freeburg gas field probably represent subsequent attempts to extend the gas field or locate other similar structures. Considerable drilling to both Silurian and Trenton rocks has been done in St. Clair and surrounding counties since the discovery of the Nashville Field in Washington County in April 1973. It would seem that the location of the site area is in a much less favorable position structurally for oil accumulation

Question Number

(22) than areas farther east and south where shelf conditions are giving way to structures that show the influence of the development of the Illinois Basin. If there are any Devonian-Silurian oil structures in the site area, we do not know about them.

(31) As the area is one of extremely low relief, we doubt that topography will have a channeling effect on air flow.

Enclosures

EHRC

Environmental Health Resource Center NEWS

No. 18

January, 1976

in this issue.....

ENVIRONMENTAL HEALTH CONSIDERATIONS IN COAL CONVERSION TECHNOLOGY.....

One of the nation's leaders in the advancement of coal conversion technology is Illinois, the fourth largest coal-producing state. Our total coal reserves represent about one sixth of the nation's total reserves. A plentiful supply of coal and abundant water resources are two of the more salient features which make Illinois an appealing site for coal conversion processes. Another possible reason for Illinois' forefront position in this industry is its willingness to meet the federal government at least part of the way financially. In fact, the Illinois General Assembly recently passed the Illinois Coal Development Act which allocated $70 million in bonding to partially finance demonstration projects, plus $10 million in start-up funds for the Illinois Energy Resources Commission which must approve all projects, and for the Department of Business and Economic Development, which will administer the bonding act.

Based on the above mentioned factors, Illinois was selected in mid-November over five other coal-rich states (Indiana, Kentucky, Ohio, Pennsylvania, and West Virginia) for a $237 million coal conversion demonstration plant. It will be located just east of New Athens, Illinois, approximately 25 miles southeast of St. Louis. Coalcon Company, of New York City, a jointly owned subsidiary of Union Carbide Corporation and Chemical Construction Company, holds the federal contract for construction of the plant. The site, which was selected over 15 other locations, is a 4,200-acre area on the edge of a Peabody Coal Company strip mine. It meets the necessary requirements in terms of water and coal supplies, rail service and pipeline transportation. Of the plant's $237 million total cost, the federal Energy Research and Development Administration (ERDA) will provide $129 million, while Coalcon and Illinois will provide the remaining $108 million (the State expenditure, a proposed $25 million, is expected to be approved by the State Energy Resources Commission). Construction is scheduled to start in late 1977 and is to be completed by June, 1980. According to a recent article in Chemical and Engineering News (December 1, 1975), the process will consume 2600 tons per day of high-sulfur coal. It will produce 2900 barrels per day of liquid fuels and 22 million standard cubic feet per day of synthetic gas. A successful pilot plant may herald the construction of a full-scale commercial plant.

The Environmental Health Resource Center is an arm of the Institute for Environmental Quality, managed under contract with the Institute by the School of Public Health, University of Illinois at the Medical Center, P. O. Box 6998, Chicago, Illinois 60680 Tel. (312) 996-7811.

Being selected as the site of a coal conversion plant offers the State of Illinois the unique opportunity to play a leading role in the United States' quest for energy independence. On December 22, 1975 President Ford officially signed the much debated and long delayed "Energy" bill which officially endorsed major developmental efforts in the area of coal conversion technology. Thus, the success of much of our energy independence program depends on projects such as the new coal conversion pilot plant in Illinois.

The residents of Illinois are highly dependent on the continued availability of economically competitive and environmentally acceptable energy. Studies in fuel and energy trends have indicated that among the factors contributing to the energy problem are the rapid rate of growth in total energy use, an increase in per capita energy consumption, and the fact that nearly all the growth occurred in oil and gas even though the resources of coal far exceed those of oil and gas. Additionally, new discoveries of oil and gas have not kept pace with the vast reserves required for production. Accordingly, our dependence on the 3 fossil fuels is shown by the fact that 95% of the approximately 72 quadrillion BTU of energy consumed annually in the U.S. is made up of petroleum, coal and natural gas. Nuclear, hydroelectric, and geothermal power combined account for only five per cent.

Despite Illinois' vast coal reserves, Illinois coal has a high sulfur content and consequently a high pollution potential in combustion. In order to comply with local sulfur standards many midwestern utilities have turned to western coal (in general, western coal has a lower sulfur content, but also lower heating value). This expensive and inefficient hauling of coal over distances of 1,000 miles or more into Illinois would become obsolete if Illinois coal could be used for energy.

The proposed antipollution alternatives, liquefaction and gasification, could eliminate the problem of sulfur emissions. Although various processes and technological pathways exist for each method and the actual physical state of the converted coal differs, the end result is virtually the same: sulfur is removed, and heretofore unusable coal resources become readily available for general usage, although the heat content of the synthetic gas varies according to the process used and the degree of methanation. It must be admitted that significant contributions of oil and gas from such sources are a number of years away.

Coextensive with our need for energy independence is the need for maintaining the quality of the environment and the health of citizens. The National Environmental Protection Act (NEPA) of 1969 has provided the legal basis and governmental authority to require all developers whose projects are expected to significantly disrupt the environment to prepare environmental impact statements which describe the consequences of the various projects on the environment. Based on a total cost/benefit analysis the regulatory agencies having authority over the construction activity will then make a decision on whether the project should be granted or denied.

Submission of an environmental impact statement, while an important and necessary part of our environmental program, needs to be supplemented. It is important to know what potential health problems this new technology may offer to both workers and community residents. Since Illinois is expected to have many thousands of workers ultimately involved in various coal gasification plant operations in future years and since this industry is in its embryonic stage it is vital to begin developing information about its benefits and risks now.

The EHRC suggests the state require that an environmental health component be included in the design, construction, and operation of the new pilot plant. This component should require the state to establish air, water, and soil sampling in the immediate vicinity of the plant and also at locations of 1/2, 1, 2 miles and possibly greater distances from the plant before operations begin, to obtain treadline levels -- then at regular and frequent intervals after start-up. Furthermore, provisions should be made to conduct epidemiologic studies on both the workers at the plant and the people whose communities will be most affected by pollutants from the plant. This should be developed during the building stage of the plant and be prospective in nature.

The siting of a coal gasification plant should include recognition of the human population exposed to its wastes and products. Not only the total exposed population must be considered, but also those high-risk individuals who, because of personal, physical, genetic or age-related characteristics, are particularly susceptible to specific or a combination of hazardous substances. Such susceptibles would include sufferers of respiratory disease or those with liver, kidney, or neurological disorders. However, if the products of coal gasification such as toxic metals and hydrocarbons are released in large enough quantities, all humans exposed to them may be affected.

The coal conversion process produces a fuel which has a much lower pollution potential than the coal from which it is derived. However, all the trace metals and other hazardous materials originally present in the coal as mined will still be present in the wastes from the process. The types of trace metals normally found in coal include such highly toxic substances as mercury, lead, cadmium, beryllium, vanadium, arsenic, nickel, and chromium. Whether these materials reach the air, water, or solid waste exit streams depends on the specific conversion process. Nickel is often used as a catalyst in coal gasification and loss of this metal from the process through catalyst degeneration may also pose a health hazard.

It is necessary, in all cases, to react varying amounts of hydrogen (water is generally the cheapest source) with the coal in order to achieve the correct carbon to hydrogen ratio for the desired product. While not well-documented for gasification processes, a large number of toxic aromatic compounds are known to be produced by the reaction of hydrogen with coal at high temperatures and pressures. Included among these compounds are anthracene, napthalene, phenols, quinolene, cresols, xylenols, pyridine, benzene, and toluene. Exposure to these may result in kidney or liver damage and corrosive action on the skin and mucous membranes. Some of the produced hydrocarbons are carcinogenic, and many result in adverse effects

on the central nervous system.

It is likely that various inorganic salts, reactive organic compounds, and trace metals will remain with the char (solid material remaining from gasification) and steps should be taken to confine these materials to the solid matrix. Most of the nitrogen and sulfur present in the original coal are not present in the ash product; these elements are most likely discharged from the gasifier as ammonia and sulfides. Most of the large scale processes which might be built in Illinois include sulfur recovery operations. Even if large amounts of sulfur are recovered, there must be consideration of the environmental consequences of use, transportation and storage of the material.

As with any high-pressure, high temperature process, much care must be exercised in its design, construction, maintenance and operation. It must be remembered that the environmental impacts of coal conversion plants are quite sizable. Federal, state, and local environmental control measures for air and water pollution are quite likely to affect coal conversion processes. The process waters which come into direct contact with contaminants in coal and are thus a principal potential source of pollution (rather than the non-process waters used only for indirect cooling) must be carefully monitored; existing standards and New Source Performance Standards must be inforced. The process waters should be recycled whenever possible since most coal conversion processes are net consumers of water. Types and sources of potential air pollutants from the conversion plants must be determined for the specific process in operation since emission factors for pollutants depend on the types of processes employed, the operating conditions, the coal used, and the methods employed for effluent control. Additionally, emission standards for pollutants from coal conversion plants that have either been promulgated or are under development may be helpful guidelines in preparation of emissions regulations in Illinois.

In conclusion, the history of industrialized countries is replete with examples where technological "advances" degraded the environment to such an extent as to significantly threaten human health. In most of these instances no consideration was given to human health until adverse effects became generally recognized. The State of Illinois has the unique opportunity to make environmental health a component of coal conversion technology. Such action by the State would clearly indicate that human health and the economy can both be served by judicious planning.

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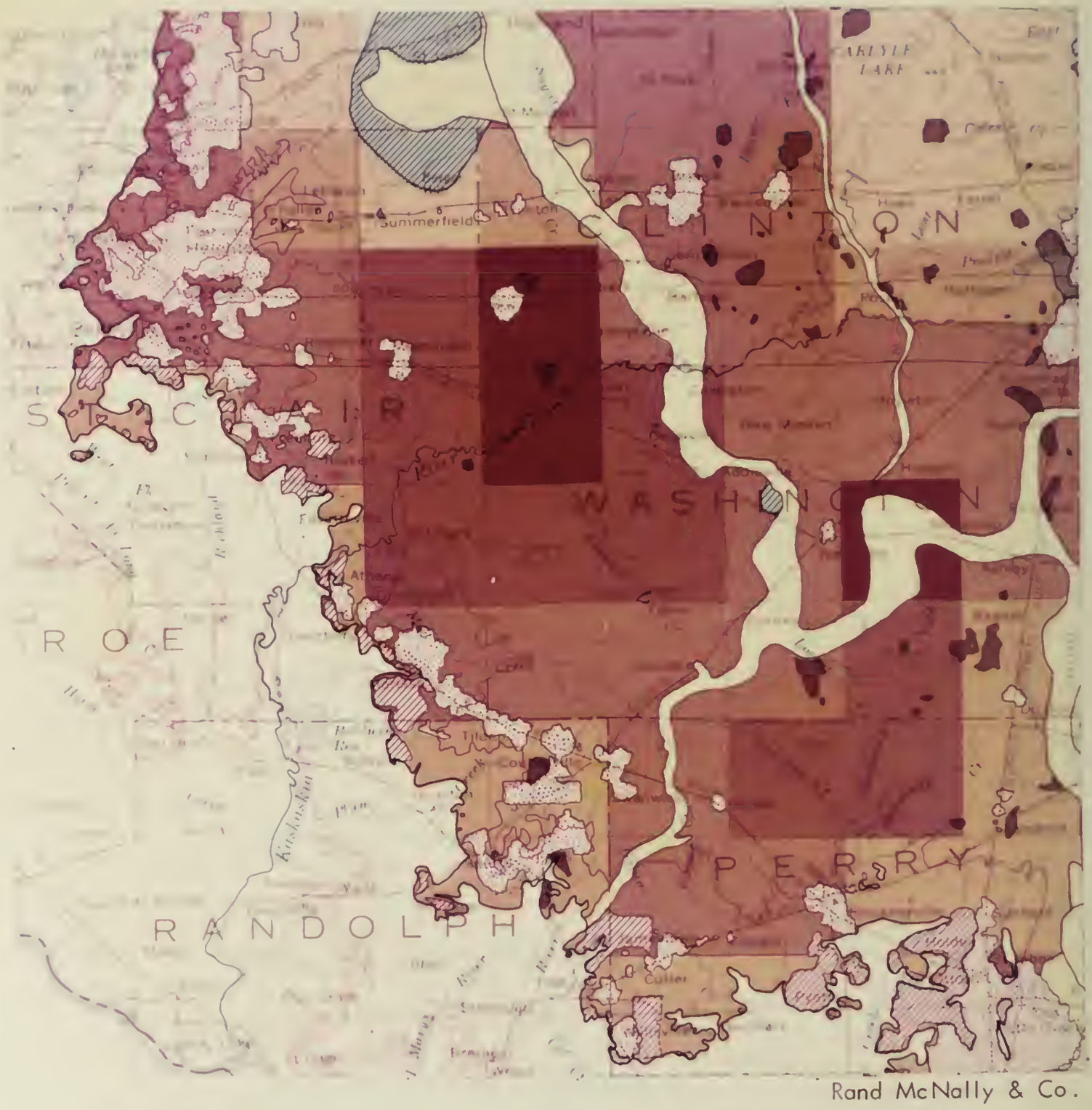
121 Natural Resources Building
Urbana, Illinois 61801

Coal Reserves of Herrin (No. 6) Coal
in the New Athens-Fayetteville Region



COAL RESERVES OF HERRIN (NO. 6) COAL IN THE NEW ATHENS-FAYETTEVILLE REGION.

(Scale and legend is shown on separate page)

SOURCE: Coal and water resources for coal conversion in Illinois, Illinois State Geological Survey-Illinois State Water Survey, Cooperative report 4, 1975 (plate I).

RESERVES OF HERRIN (NO. 6) COAL
(more than 42 inches thick)

AVERAGE TONS OF COAL PER SQUARE MILE
(in millions of tons)

- > 9
- 8-9
- 7-8
- 6-7
- 5-6
- 4-5

THIN COAL, LIMITING FEATURES, AND DEPLETED AREAS

- Coal less than 42″ thick
- Thin coal (av. less than 28″ thick)
- Heavily drilled for oil and gas
- Insufficient data for estimates of reserves
- Coal split or thin
- Coal missing because of sandstone channels
- Mined-out area — strip
- Mined-out area — underground

(Mined-out area — strip, Mined-out area — underground: boundaries drawn to July 1, 1973)

- Coal eroded
- Limit of Coal Seam
- 150 Foot Depth Line
- Boundary of Pennsylvanian System

Scale 1:500,000
1 inch equals approximately 8 miles

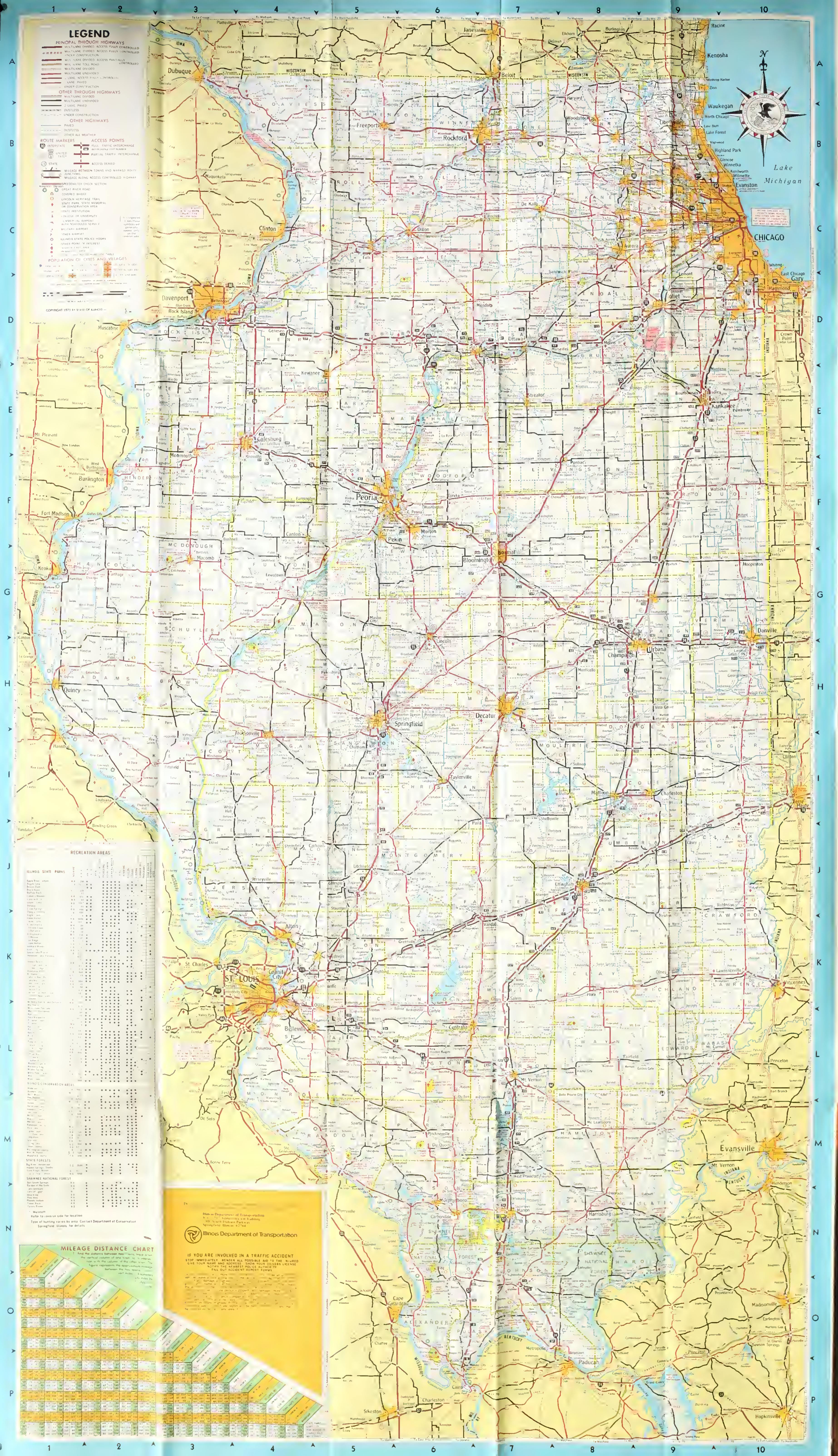
10 0 10 20 30 40 Miles

10 0 10 20 30 40 50 Kilometers

ILLINOIS HIGHWAY MAP 1975-1976

In 1776, when Independence was declared, the territory that is now Illinois had been claimed from the French by the Province of Virginia.

AMERICAN REVOLUTION BICENTENNIAL 1776-1976



INDEX TO CITIES AND VILLAGES

POINTS OF INTEREST

COLLEGES AND UNIVERSITIES

JUNIOR COLLEGES

STATE INSTITUTIONS

STATE MEMORIALS

OTHER POINTS OF INTEREST

ILLINOIS HIGHWAY MAP 1975-1976

In 1776, when Independence was declared, the territory that is now Illinois had been claimed from the French by the 'Province of Virginia.'

LEGEND

CHICAGO AND VICINITY

SCALE OF MILES

CHICAGO DOWNTOWN

CHICAGO METROPOLITAN EXPRESSWAY SYSTEM AND TOLLWAY CONNECTIONS

CHICAGOLAND EXPRESSWAY AND TOLLWAY DIRECTORY

QUAD CITIES AREA

EAST ST. LOUIS ST. LOUIS AND VICINITY

SCALE OF MILES

ROCKFORD AND VICINITY

CHAMPAIGN URBANA

DANVILLE AND VICINITY

BLOOMINGTON NORMAL

QUINCY

PEORIA AND VICINITY

SPRINGFIELD AND VICINITY

KANKAKEE AND VICINITY

DECATUR

Horseshoe Lake	D 6	7901	
Iroquois County	L 10	2230	
Lee County	D 6	480	
McLean County	G 7	1616	
Marshall County	E 6	2122	
Marmet Lake	D 7	2577	
Randolph County	M 5	1031	
Rice Lake	G 5	2617	
Saline County	N 8	1208	
Sam Dale Lake	L 8	1301	
Sangamois	H 4	1450	
Spartano	E 6	1280	
Spring Lake	G 5	1946	
Union County	D 6	6202	
Washington County	L 6	1378	
Wm. W. Powers	C 10	580	
Woodford County	F 6	896	

STATE FORESTS

Big River (Henderson)	E 2	2644
Hidden Springs (Shelby)	J 7	1101
Sand Ridge (Mason)	G 5	6212
Trail of Tears (Union)	N 6	3990

SHAWNEE NATIONAL FOREST

Bell Smith Springs	O 8	
Garden of the Gods	N 8	
Lake Glendale	O 8	
Lake of Egypt	N 7	
Ohio River	O 8	
Pine Hills	N 6	
Pounds Hollow	N 9	
Tower Rock	N 9	
Turkey Bayou	N 9	

**Museum

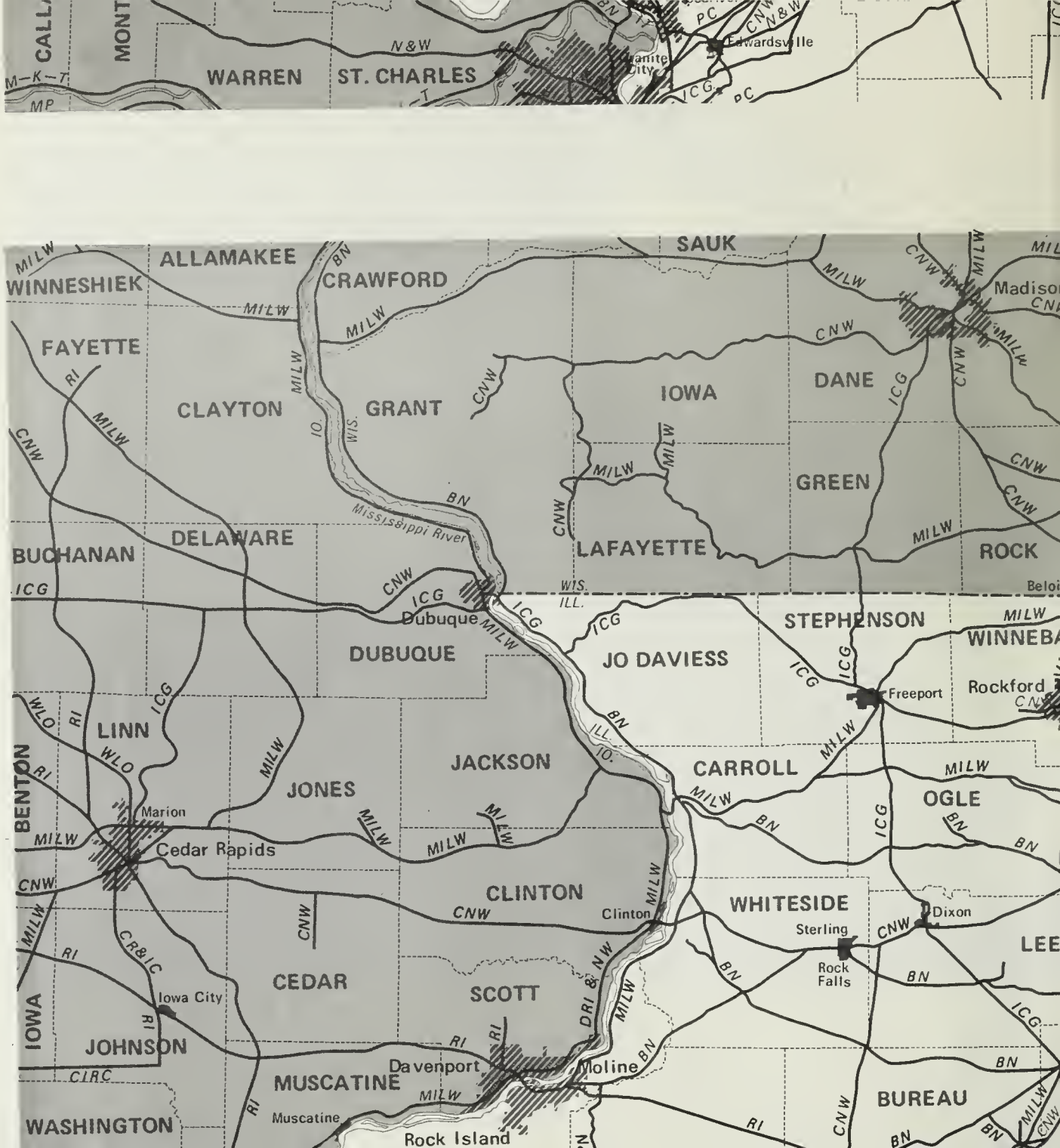
*Refer to reverse side for location.

Type of hunting varies by area Contact Department of Conservation, Springfield, Illinois, for details

MILEAGE DISTANCE CHART

To find the distance between two towns, trace down the vertical column of one town, to its intersection with the column of the other town. The figure represents the approximate mileage between the two towns To convert miles to Kilometers multiply miles by 1.61 (Approximate)

	ALTON	AURORA	BLOOMINGTON	BURLINGTON, IOWA	CAIRO	CARBONDALE	CHAMPAIGN	CHESTER	CHICAGO	CLINTON, IOWA	DANVILLE	DECATUR	DIXON	DUBUQUE, IOWA	EAST ST. LOUIS	EFFINGHAM	ELGIN	EVANSVILLE, IND.	FAIRFIELD	GALESBURG	HARRISBURG	IMPERIAL
ALTON	0	536	147	180	184	126	155	82	278	222	188	106	526	576	54	96	276	190	575	164	152	557
AURORA	536	0	107	183	364	210	157	214	40	108	137	153	68	159	264	199	55	599	99	142	311	319
BLOOMINGTON	147	107	0	120	261	203	51	205	129	145	82	46	105	200	155	110	127	558	142	89	520	166
BURLINGTON, IOWA	180	183	120	0	254	596	180	562	556	112	511	169	144	145	204	354	208	345	171	44	355	395
CAIRO	184	364	261	254	0	58	238	87	372	392	559	215	268	445	151	165	384	134	406	357	72	589
CARBONDALE	126	210	203	596	58	0	196	28	221	355	522	157	210	287	93	152	530	101	348	269	28	556
CHAMPAIGN	155	157	51	180	238	196	0	310	136	195	22	49	158	253	163	72	147	189	196	139	185	116
CHESTER	82	214	205	562	87	28	310	0	226	218	227	164	303	258	58	127	234	129	341	252	76	278
CHICAGO	278	40	129	556	372	221	136	226	0	145	132	175	105	178	286	208	38	298	115	185	250	188
CLINTON, IOWA	222	108	145	112	392	355	195	218	145	0	226	181	43	62	256	243	127	363	61	69	355	310
DANVILLE	188	137	82	511	559	522	22	227	132	226	0	85	189	284	196	100	157	162	227	170	188	84
DECATUR	106	153	46	169	215	157	49	164	175	181	85	0	153	348	114	64	175	182	191	125	174	153
DIXON	526	68	105	144	268	210	158	303	105	43	189	153	0	95	260	217	77	235	38	97	327	573
DUBUQUE, IOWA	576	159	200	145	445	287	253	258	178	62	284	348	95	0	300	215	141	430	63	155	412	368
EAST ST. LOUIS	54	264	155	204	151	93	163	58	286	256	196	114	260	300	0	98	284	168	296	188	121	529
EFFINGHAM	96	199	110	354	165	152	72	127	208	243	100	64	217	215	98	0	319	118	255	107	112	141
ELGIN	276	55	127	208	384	330	147	234	38	127	157	175	77	141	284	319	0	519	78	307	531	523
EVANSVILLE, IND.	190	599	558	345	134	101	189	129	298	363	162	182	235	430	168	118	519	0	373	153	65	162
FAIRFIELD	575	99	142	171	406	348	196	341	115	61	227	191	38	63	296	255	78	373	0	207	365	304
GALESBURG	164	142	89	44	357	269	139	252	185	69	170	125	97	155	188	189	165	307	153	0	393	254
HARRISBURG	152	311	520	355	72	28	185	76	250	355	188	174	327	412	121	112	531	65	365	393	0	216
IMPERIAL	557	319	166	395	589	536	116	278	188	310	84	153	573	368	529	141	523	162	304	254	216	0
INDIANAPOLIS	61	205	96	119	239	181	119	143	227	171	155	75	175	215	85	116	225	534	211	103	207	325
IOWA CITY	245	52	93	191	250	296	113	200	30	124	115	129	87	185	250	185	42	577	125	148	297	167
JACKSONVILLE	226	58	85	192	214	575	77	284	58	160	79	150	155	251	234	149	78	541	161	148	561	154
JOLIET	209	56	61	125	324	266	114	267	92	82	145	109	45	140	217	175	78	591	83	95	283	229
KANKAKEE	45	214	105	179	178	120	115	101	226	218	146	64	303	570	51	69	524	183	241	155	146	210
KEWANEE	158	189	105	52	505	544	141	510	230	115	172	117	144	148	152	172	515	590	180	47	270	256
LA SALLE	240	135	205	359	468	410	549	411	151	139	274	255	106	95	361	317	114	435	68	201	457	340
MACOMB	155	174	91	314	192	150	48	164	183	326	75	45	198	593	125	27	194	142	236	170	139	155
MATTOON	356	113	307	370	459	410	225	414	93	165	254	355	158	161	364	294	87	386	104	326	406	286
MOLINE	100	369	167	369	101	59	143	76	278	302	170	121	274	360	78	70	289	90	512	342	59	211
MONMOUTH	322	42	74	148	337	279	114	580	78	95	145	125	58	133	336	186	64	302	96	105	296	351
MORRIS	199	365	366	369	33	72	337	109	372	408	240	220	373	460	166	164	382	109	411	342	54	371
MOUNT VERNON	160	175	113	343	225	187	63	201	168	257	56	74	320	315	162	64	193	126	258	201	152	96
OTTAWA	148	118	40	92	288	330	90	513	155	105	121	76	90	167	163	140	140	258	128	49	250	205
PEKIN	114	248	153	77	256	226	192	188	284	184	225	145	212	217	138	189	270	307	249	116	264	298
PEORIA	277	69	159	184	392	234	182	225	85	84	513	177	42	95	285	241	48	359	59	140	551	274
PONTIAC	204	133	140	72	378	220	190	286	166	40	251	176	69	75	358	340	148	258	96	55	246	305
QUINCY	53	366	157	203	154	96	165	61	288	255	198	116	359	299	2	100	386	170	295	187	154	341
ROCK ISLAND	85	171	62	136	218	160	86	145	193	175	119	39	160	227	93	88	191	206	198	109	186	192
ROCKFORD	224	79	116	129	367	309	169	292	114	29	200	155	15	88	248	319	96	357	49	85	329	264
SPRINGFIELD	163	196	126	366	225	190	86	204	187	280	59	97	245	338	165	67	216	111	381	324	154	75
STERLING	63	217	110	215	151	93	106	111	239	245	135	64	217	303	65	55	237	147	555	185	110	174
URBANA	164	244	183	299	172	139	134	175	243	320	107	139	292	387	150	75	264	55	530	364	101	117
WAUKEGAN	310	67	161	253	413	364	176	268	41	172	178	207	114	166	318	248	40	340	103	310	260	340
WINDSOR	158	255	215	308	52	12	207	50	345	347	254	169	322	399	105	154	342	113	360	281	50	275
WOODSTOCK	56	572	165	169	210	152	171	108	294	241	204	152	245	285	50	120	392	216	281	172	179	261
YORK	211	55	62	143	226	268	116	269	89	90	147	111	55	148	519	175	75	293	91	100	285	231
ZION	343	73	117	156	380	322	170	315	99	52	201	165	12	88	568	359	72	347	21	105	339	283


WARREN
ST. CHARLES
Granite City
Edwardsville
SAUK
ALLAMAKEE
WINNESHIEK
CRAWFORD
FAYETTE
CLAYTON
GRANT
IOWA
DANE
GREEN
LAFAYETTE
ROCK
Mississippi River
BUCHANAN
DELAWARE
Dubuque
DUBUQUE
JO DAVIESS
STEPHENSON
Freeport
Rockford
LINN
JACKSON
JONES
CARROLL
OGLE
BENTON
Marion
Cedar Rapids
CLINTON
Clinton
WHITESIDE
Sterling
Dixon
Rock Falls
CEDAR
SCOTT
Iowa City
JOHNSON
Davenport
Moline
MUSCATINE
Muscatine
BUREAU
WASHINGTON
Rock Island

ILLINOIS RAILROADS

ILLINOIS DEPARTMENT OF TRANSPORTATION

January 1975

0 5 10 20 30 miles

Cities over 10,000 population

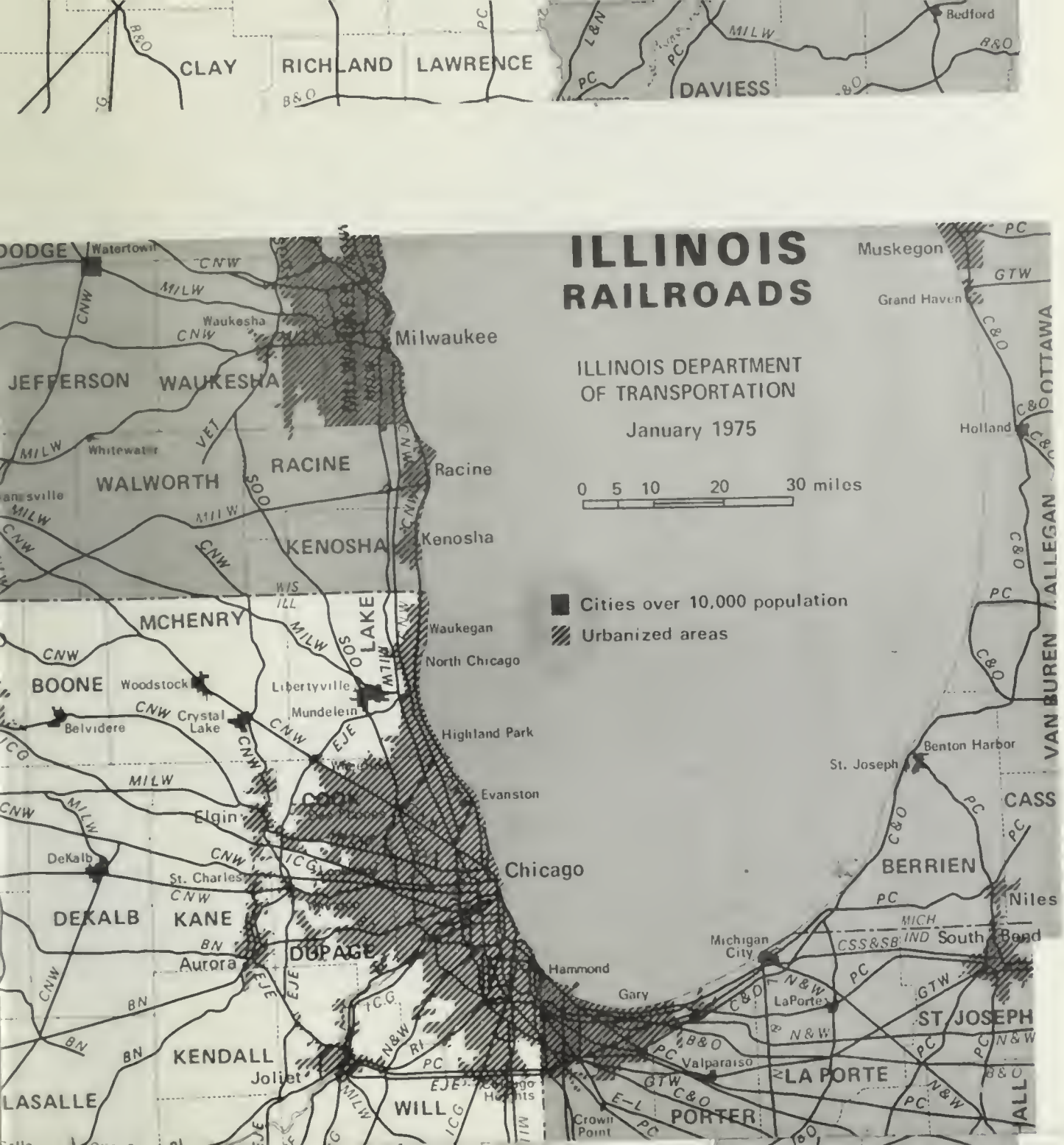
Urbanized areas

Wisconsin: ALLAMAKEE, WINNESHIEK, FAYETTE, CLAYTON, CRAWFORD, GRANT, SAUK, DODGE, Watertown, Madison, Waukesha, Milwaukee, JEFFERSON, WAUKESHA, DANE, IOWA, GREEN, LAFAYETTE, ROCK, WALWORTH, Whitewater, Janesville, Beloit, RACINE, Racine, KENOSHA, Kenosha

Iowa: DELAWARE, BUCHANAN, Dubuque, DUBUQUE, JO DAVIESS, STEPHENSON, WINNEBAGO, Freeport, Rockford, MCHENRY, BOONE, Woodstock, Belvidere, Crystal Lake, Libertyville, Mundelein, Waukegan, North Chicago, Highland Park, LAKE, LINN, JACKSON, JONES, CARROLL, OGLE, Marion, Cedar Rapids, Elgin, Evanston, Chicago, DeKalb, St. Charles, CLINTON, Clinton, WHITESIDE, Sterling, Dixon, DEKALB, KANE, LEE, Rock Falls, Aurora, DUPAGE, CEDAR, SCOTT, Iowa City, Hammond, Gary, LaPorte, Michigan City, South Bend, Niles, Valparaiso, JOHNSON, Davenport, Moline, MUSCATINE, Muscatine, KENDALL, Joliet, LA PORTE, PORTER, Crown Point, WILL, LASALLE, BUREAU, WASHINGTON, Rock Island, ROCK ISLAND, HENRY, Kewanee, Peru, Ottawa, Illinois River, GRUNDY, LAKE, STARKE, MERCER, LOUISA, PUTNAM, KANKAKEE, Kankakee, JASPER, PULASKI, FULTON, CASS, WHITE, Logansport, Holland, Muskegon, Grand Haven, OTTAWA, ALLEGAN, VAN BUREN, BENTON, St. Joseph, Benton Harbor, CASS, BERRIEN, Niles, MARSHALL, JEFFERSON, HENRY, DES MOINES, KNOX, STARK, MARSHALL, LIVINGSTON, WARREN, Galesburg, Monmouth, WOODFORD, Pontiac, IROQUOIS, NEWTON, Burlington, HENDERSON, PEORIA, MCLEAN, BENTON, CARROLL, Fort Madison, LEE, FULTON, Peoria, Canton, Morton, Normal, Bloomington, TIPPECANOE, HOWARD, Keokuk, Macomb, TAZEWELL, FORD, WARREN, Lafayette, CLINTON, Frankfort, CLARK, HANCOCK, MC DONOUGH, VERMILION, Rantoul, Danville, MONTGOMERY, MASON, DEWITT, CHAMPAIGN, Lincoln, Champaign, Urbana, Crawfordsville, BOONE, LEWIS, ADAMS, SCHUYLER, MENARD, LOGAN, PIATT, FOUNTAIN, CASS, Quincy, MACON, MARION, BROWN, Decatur, Indianapolis, PUTNAM, MORGAN, Springfield, Jacksonville, DOUGLAS, EDGAR, PARKE, HENDRICKS, SCOTT, SANGAMON, MOULTRIE, COLES, VERMILLION, Mississippi River, RALLS, PIKE, Taylorville, SHELBY, Mattoon, Charleston, Terre Haute, CLAY, MONROE, MACOUPIN, CHRISTIAN, CUMBERLAND, CLARK, VIGO, OWEN, MONROE, BROWN, PIKE, GREENE, Illinois River, MONTGOMERY, FAYETTE, Effingham, JASPER, CRAWFORD, SULLIVAN, Bloomington, AUDRIAN, LINCOLN, JERSEY, Alton, MADISON, EFFINGHAM, GREENE, LAWRENCE, CALHOUN, Wood River, Edwardsville, BOND, CLAY, RICHLAND, LAWRENCE, Vincennes, DAVIESS, Washington, CALLAWAY, MONTGOMERY, WARREN, ST. CHARLES, St. Louis, CLINTON, Collinsville, East St. Louis, Belleville, Centralia, MARION, WAYNE, WABASH, EDWARDS, KNOX, MARTIN, ORANGE, OSAGE, GASCONADE, FRANKLIN, ST. CLAIR, JEFFERSON, Vernon, GIBSON, PIKE, DUBOIS, CRAWFORD, MARIES, MONROE, WASHINGTON, PERRY, HAMILTON, WHITE, VANDERBURGH, WARRICK, PERRY, MEADE, CRAWFORD, RANDOLPH, FRANKLIN, POSEY, Evansville, SPENCER, PHELPS, WASHINGTON, STE. GENEVIEVE, JACKSON, Murphysboro, Carbondale, Marion, GALLATIN, Henderson, HENDERSON, Owensboro, HANCOCK, BRECKINRIDGE, ST. FRANCOIS, PERRY, WILLIAMSON, SALINE, DAVIESS, IRON, DENT, UNION, WEBSTER, MC LEAN, OHIO, GRAYSON, MADISON, CAPE GIRARDEAU, UNION, JOHNSON, POPE, HARDIN, REYNOLDS, Cape Girardeau, CRITTENDEN, HOPKINS, Madisonville, TEXAS, SHANNON, BOLLINGER, PULASKI, MASSAC, CALDWELL, MUHLENBERG, BUTLER, WAYNE, SCOTT, ALEXANDER, MC CRACKEN, Paducah, LIVINGSTON, CHRISTIAN, WARREN, CARTER, STODDARD, BALLARD, LYON, MARSHALL, TODD, LOGAN, MISSISSIPPI

RAILROAD ABBREVIATIONS

ALGERS, WINSLOW AND WESTERN	AW & W
ALTON & SOUTHERN RY	A & S
ANNA - JONESBORO RY	A - J
ATCHISON, TOPEKA AND SANTA FE RY	SF
AURORA, ELGIN & FOX RIVER VALLEY ELECTRIC CO. RR	AE & FR
BALTIMORE & OHIO CHICAGO TERMINAL RR	B & OCT
BALTIMORE & OHIO RR	B & O
BELT RY OF CHICAGO	BRC
BURLINGTON NORTHERN	BN
CALUMET WESTERN RY	CW
CEDAR RAPIDS AND IOWA CITY	CR & IC
CENTRAL INDIANA RY. CO.	CI
CENTRAL IOWA RY CO.	CIRC
CHESAPEAKE AND OHIO RY	C & O
CHICAGO & EASTERN ILLINOIS RR	CEI
CHICAGO & ILLINOIS MIDLAND RY	CIM
CHICAGO & ILLINOIS WESTERN RY	C & IW
CHICAGO & NORTH WESTERN RY	CNW
CHICAGO & WESTERN INDIANA RR	CWI
CHICAGO HEIGHTS TERMINAL TRANSFER RR	CHTT
CHICAGO, MILWAUKEE, ST. PAUL AND PACIFIC RR	MILW
CHICAGO PRODUCE TERMINAL	CPT
CHICAGO RIVER & INDIANA RR	CRI
CHICAGO, ROCK ISLAND AND PACIFIC RR	RI
CHICAGO SHORT LINE	CSL
CHICAGO SOUTH SHORE AND SOUTH BEND RR	CSS & SB
CHICAGO, WEST PULLMAN & SOUTHERN RR	CWP & S
DAVENPORT, ROCK ISLAND AND NORTHWESTERN RY	DRI & NW
EAST ST. LOUIS JUNCTION RR	ESTLJ
ELGIN, JOLIET AND EASTERN RY	EJE
ERIE - LACKAWANNA RY	E - L
FERDINAND	FERD
GRAND TRUNK WESTERN RR	GTW
ILLINOIS CENTRAL GULF RR	ICG
ILLINOIS NORTHERN RY	IN
ILLINOIS TERMINAL RR	IT
INDIANA HARBOR BELT RR	IHB
LA SALLE & BUREAU COUNTY RR	L & BC
LEE COUNTY CENTRAL ELECTRIC RR	LCCE
LOUISIANA & PIKE COUNTY	L & PC
LOUISVILLE AND NASHVILLE RR	L & N
MANUFACTURERS JUNCTION RY	MJ
MISSOURI - ILLINOIS RR	MI
MISSOURI - KANSAS - TEXAS	M - K- T
MISSOURI PACIFIC RR	MP
NORFOLK AND WESTERN RY	N & W
PADUCAH & ILLINOIS	P & I
PENN CENTRAL TRANS CO	PC
PEORIA & BUREAU VALLEY RR	P & BV
PEORIA & PEKIN UNION RY	P & PU
PEORIA TERMINAL	PT
ST. LOUIS - SAN FRANCISCO	SL-SF
ST. LOUIS SOUTHWESTERN RY	SSW
SOO LINE RR	SOO
SOUTHERN RY	SOU
TERMINAL RR ASSOCIATION OF ST. LOUIS	TRRA
TOLEDO, PEORIA & WESTERN RR	TP & W
VILLAGE OF EAST TROY	VET
WATERLOO	WLO


ILLINOIS
RAILROADS
ILLINOIS DEPARTMENT
OF TRANSPORTATION
January 1975
0 5 10 20 30 miles
Cities over 10,000 population
Urbanized areas
Milwaukee
Racine
Kenosha
Waukegan
North Chicago
Highland Park
Evanston
Chicago
Elgin
Aurora
Joliet
Woodstock
Libertyville
Mundelein
Crystal Lake
Belvidere
DeKalb
St. Charles
Hammond
Gary
Michigan City
LaPorte
Valparaiso
Crown Point
Muskegon
Grand Haven
Holland
Benton Harbor
St. Joseph
Niles
South Bend
Bedford
JEFFERSON
WAUKESHA
WALWORTH
RACINE
KENOSHA
MCHENRY
BOONE
DEKALB
KANE
DUPAGE
KENDALL
LASALLE
WILL
COOK
LAKE
PORTER
LA PORTE
ST JOSEPH
BERRIEN
CASS
VAN BUREN
ALLEGAN
OTTAWA
DAVIESS
CLAY
RICHLAND
LAWRENCE
CNW
MILW
B&O
PC
GTW
C&O
N&W
CSS&SB
MICH
IND
EJE
ICG
BN
RI
L&N
E-L
SOO
WIS
ILL
VET

STATE OF ILLINOIS

ILLINOIS COMMERCE COMMISSION

527 EAST CAPITOL AVENUE
SPRINGFIELD, ILLINOIS 62706

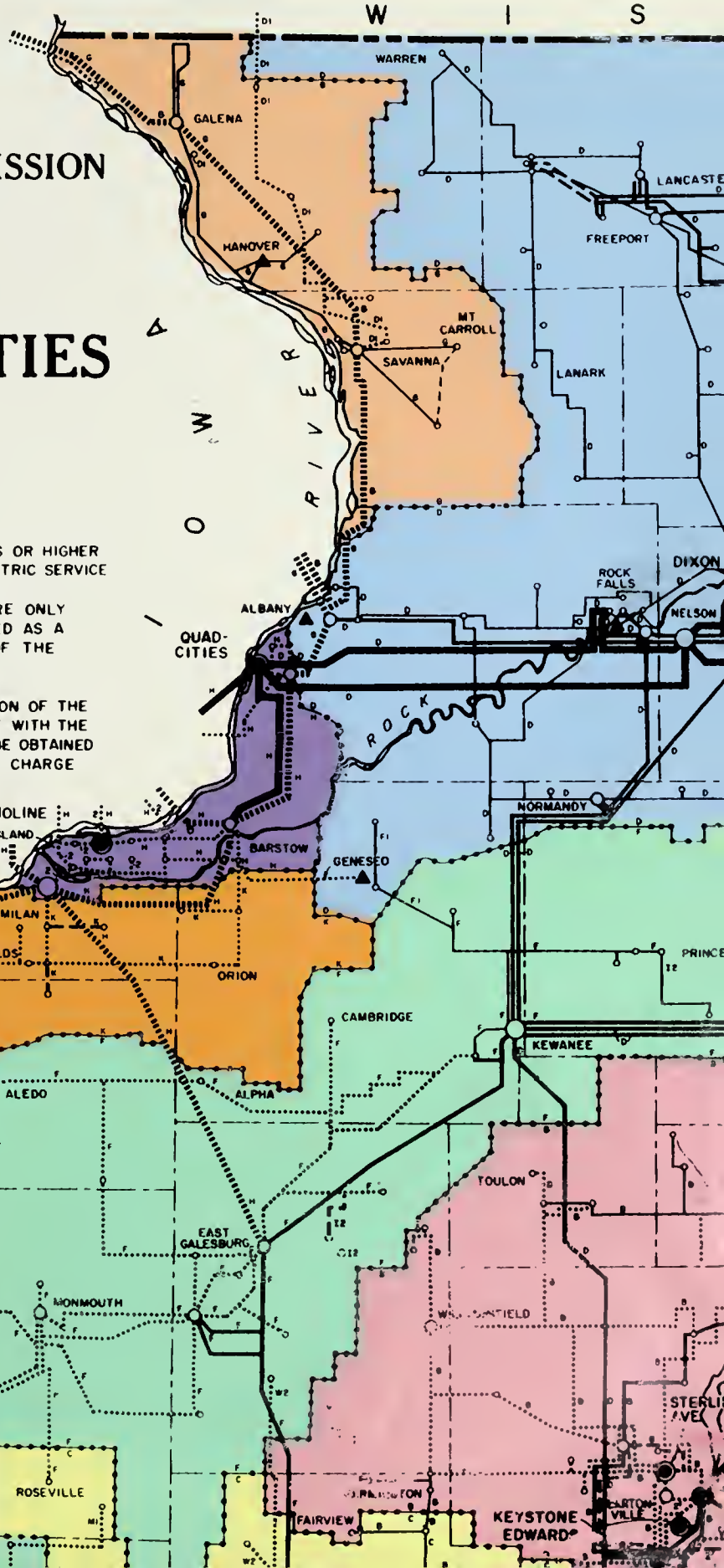
ELECTRIC UTILITIES IN ILLINOIS

THIS MAP SHOWS TERRITORIAL BOUNDARY LINES, 34,500 VOLTS OR HIGHER TRANSMISSION LINES, AND MUNICIPALITIES WHICH SUPPLY ELECTRIC SERVICE

THE TERRITORIES SHOWN FOR THE RESPECTIVE UTILITIES ARE ONLY DETERMINED APPROXIMATELY AND ARE NOT TO BE CONSIDERED AS A DETERMINATION BY THE ILLINOIS COMMERCE COMMISSION OF THE TERRITORIAL BOUNDARY OF EACH UTILITY

THIS MAP HAS BEEN REPRINTED FOR AND WITH THE PERMISSION OF THE ILLINOIS COMMERCE COMMISSION BY SPECIAL ARRANGEMENT WITH THE ILLINOIS COMMERCE COMMISSION. COPIES OF THIS MAP MAY BE OBTAINED FROM THE COMMONWEALTH EDISON COMPANY AT A NOMINAL CHARGE

JANUARY 1, 1975



STATE OF ILLINOIS
ILLINOIS COMMERCE COMMISSION
527 EAST CAPITOL AVENUE
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JANUARY 1, 1975

LEGEND

TRANSMISSION LINES
- 34,500 VOLTS
- 69,000 VOLTS
- 138,000 VOLTS
- 161,000 VOLTS
- 230,000 VOLTS
- 345,000 VOLTS
- 765,000 VOLTS
- PROPOSED LINE
- MULTIPLE LINES

BOUNDARY LINES
- UTILITY
- COUNTY

STATIONS
- GENERATING STATION OR PEAKING SUBSTATION (20,000 KW AND OVER)
- SUBSTATION

UTILITIES
- A CEDAR POINT LIGHT AND WATER COMPANY
- B CENTRAL ILLINOIS LIGHT COMPANY
- C CENTRAL ILLINOIS PUBLIC SERVICE COMPANY
- D COMMONWEALTH EDISON COMPANY
- E ELECTRIC ENERGY, INCORPORATED
- F ILLINOIS POWER COMPANY
- G INTERSTATE POWER COMPANY
- I IOWA-ILLINOIS GAS AND ELECTRIC COMPANY
- M MT CARMEL PUBLIC UTILITY CO
- P SHERRARD POWER SYSTEM
- S SOUTH BELOIT WATER, GAS, AND ELECTRIC COMPANY
- U UNION ELECTRIC COMPANY

COOPERATIVES
- C CLAY ELECTRIC COOPERATIVE, INCORPORATED
- C2 CLINTON COUNTY ELECTRIC COOPERATIVE, INCORPORATED
- C3 COLES MOULTRIE ELECTRIC COOPERATIVE
- C4 CORN BELT ELECTRIC COOPERATIVE, INCORPORATED
- D1 DAIRYLAND POWER COOPERATIVE, INCORPORATED
- E EASTERN ILLINOIS POWER COOPERATIVE
- E2 EDGAR ELECTRIC COOPERATIVE ASSOCIATION
- F1 FARMERS MUTUAL ELECTRIC COMPANY
- I ILLINI ELECTRIC COOPERATIVE
- I2 ILLINOIS VALLEY ELECTRIC COOPERATIVE, INCORPORATED
- M MCDONOUGH POWER COOPERATIVE
- M2 MONROE COUNTY ELECTRIC COOPERATIVE, INCORPORATED
- N NORRIS ELECTRIC COOPERATIVE
- S SHELBY ELECTRIC COOPERATIVE
- S2 SOUTHERN ILLINOIS POWER COOPERATIVE
- S3 SOUTHWESTERN ELECTRIC COOPERATIVE, INCORPORATED
- T TRI COUNTY ELECTRIC COOPERATIVE, INCORPORATED
- W WAYNE WHITE COUNTIES ELECTRIC COOPERATIVE
- W2 WESTERN ILLINOIS POWER COOPERATIVE, INCORPORATED

MUNICIPALITIES
- ▲ MUNICIPALITY SUPPLYING ELECTRIC SERVICE
- △ MUNICIPALITY SUPPLYING ELECTRIC SERVICE IN COMPETITION WITH UTILITY

SCALE

525000 550000 575000

LEGEND

RES, NAVIGATION AND DRAINAGE

- OVER 20 FT. CLEAR SPAN
- IN LENGTH
- TOLL FERRY
- ANOING — OAM WITH LOCK
- OR OREOGED STREAM
- LEVEE

NDARY LINES AND SCREENS

- R ROAO OISTRICT
- E OR PARK AREA
- TATION
- NE WASTE AREA

AIRPORTS

- ICE
- OTNER
- SEAPLANE BASE

CULTURAL FEATURES

- FARM UNIT (Figure Oenotes Number of Units)
- OWELLING
- BUSINESS ESTABLISHMENT
- INOUSTRIAL PLANT
- SCNOOL
- NOSPITAL OR NURSING HOME
- CNURCN
- HOTEL OR MOTEL
- PUBLIC BUILOING
- POST OFFICE
- CEMETERY
- CHURCN WITH CEMETERY AOJACENT
- MINE SNAFT
- GRAVEL PIT OR OUARRY
- GARBAGE, RUBBISN ANO OTNER OUMP
- POWER PLANT
- AUTO OR SCRAP METAL JUNKYARO
- HIGNWAY GARAGE
- ATNLETIC FIELO OR AMUSEMENT PARK
- SUBSTATION
- SEWAGE OISPOSAL
- GOLF COURSE OR COUNTRY CLUB (GC)
- SMALL PARK
- RIFLE CLUB (RC)
- REST AREA
- CORRECTIONAL INSTITUTION
- INCINERATOR
- COUNTY FARM, ORPHANAGE

- FAIR GROUNO OR RACE COURS
- GAUGING OR PUMPING STATIO
- LOOKOUT TOWER — COMPR
- GRAIN STORAGE BIN
- STORAGE TANK — R
- SEASONAL OWELLING, TRAILE
- OIL OR GAS WELLS — STA
- FISN NATCNERY
- MICROWAVE STATION
- (T) or (W) TOLL PLAZA (T)

[1] Rural Roods or State Maintained S
[2] Not Indicoted on Municipol Streets

90° 05' 90° 00' 89° 55'

R 9 W R 8 W

TO ALTON
TO COLLINSVILLE
CAHOKIA MOUNDS STATE PARK
STATE PARK PLACE
FAP 12
COLLINSVILLE
COUNTY
POP 19,567
FAIRMONT CITY
POP 2,769
WASHINGTON PARK
FOREST ACRES
HOLLYWOOD HEIGHTS
OAK HILLS
POP 9,524
CANTEEN
POP 3,411
CASEYVILLE
ST CLAIR FARMS
CARMEL TERRACE
HIGH POINT TERRACE
UNDER CONSTR.
FAIRVIEW HEIGHTS
POP 12,577
O'FALLON
POP 9,365
FRANK HOLTEN STATE PARK
SIGNAL HILL
HOLLANDIA
CORAL GABLES
COHSTR
COUNTRY ACRES
SHILOH
POP 945
ST CLAIR COUNTRY CLUB
TWILIGHT TERRACE
SUNSET HILLS
EMERALD TERRACE
LAKE CHRISTINE

GENERAL HIGHWAY MAP
ST CLAIR COUNTY
ILLINOIS

PREPARED BY THE
DEPARTMENT OF TRANSPORTATION
OFFICE OF PLANNING PROGRAMMING
& ENVIRONMENTAL SCIENCE

IN COOPERATION WITH THE
U S DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

SCALE

SCALE OF ENLARGEMENTS

LEGEND

CLASSIFICATION OF ROADS AND STREETS

- MARKED ROUTE U.S. (U.S. AND INTERSTATE)
- MICHIGAN BOTH CONTROLLED ACCESS
- (CROSS INDICATES REMOVABLE ROAD)
- PAVED DIVIDED
- PAVED UNDIVIDED
- BITUMINOUS
- GRAVEL OR STONE
- SOIL SURFACE
- GRADED AND DRAINED
- UNIMPROVED
- FEDERAL AID PRIMARY ROUTE
- FEDERAL AID SECONDARY
- COUNTY HIGHWAY

CITIES AND VILLAGES

- COUNTY SEAT
- OTHER
- LIMITS OF CONGESTED AREA

STRUCTURES, NAVIGATION AND DRAINAGE

- HIGHWAY BRIDGE OVER 20 FT CLEAR SPAN
- POPULATION OVER 20 PER SQ MI IN LENGTH
- FREE FERRY
- TOLL FERRY
- DOCKS VIEW OR LOADING
- DAM WITH LOCK
- DRAINAGE DITCH OR DREDGED STREAM
- CANAL
- LEVEE

BOUNDARY LINES AND SCREENS

- CIVIL TOWNSHIP OR ROAD DISTRICT
- FOREST RESERVE OR OPEN AREA
- MILITARY RESERVATION
- SNOW FENCE OR HIGHWAY SCREEN

AIRPORTS

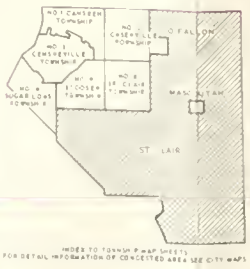
- SCHEDULED SERVICE
- OTHER
- MILITARY
- SEAPLANE BASE

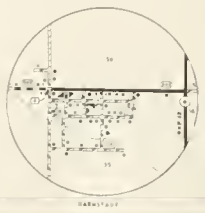
CULTURAL FEATURES

- FARM UNIT (Square Denotes Number of Units)
- DWELLING
- BUSINESS ESTABLISHMENT
- INDUSTRIAL PLANT
- SCHOOL
- HOSPITAL OR NURSING HOME
- CHURCH
- MOTEL OR HOTEL
- PUBLIC BUILDING
- POST OFFICE
- CEMETERY
- CHURCH WITH CEMETERY ADJACENT
- MINE SHAFT
- GRAVEL PIT OR QUARRY
- GARBAGE, RUBBISH AND OTHER DUMP
- POWER PLANT
- AUTO OR SCRAP METAL JUNKYARD
- HIGHWAY GARAGE
- ATHLETIC FIELD OR AMUSEMENT PARK
- SUBSTATION
- SEWAGE DISPOSAL
- GOLF COURSE OR COUNTRY CLUB
- SMALL PARK
- RIFLE CLUB
- REST AREA
- CORRECTIONAL INSTITUTION
- COUNTY FARM OR HOMEMAKE

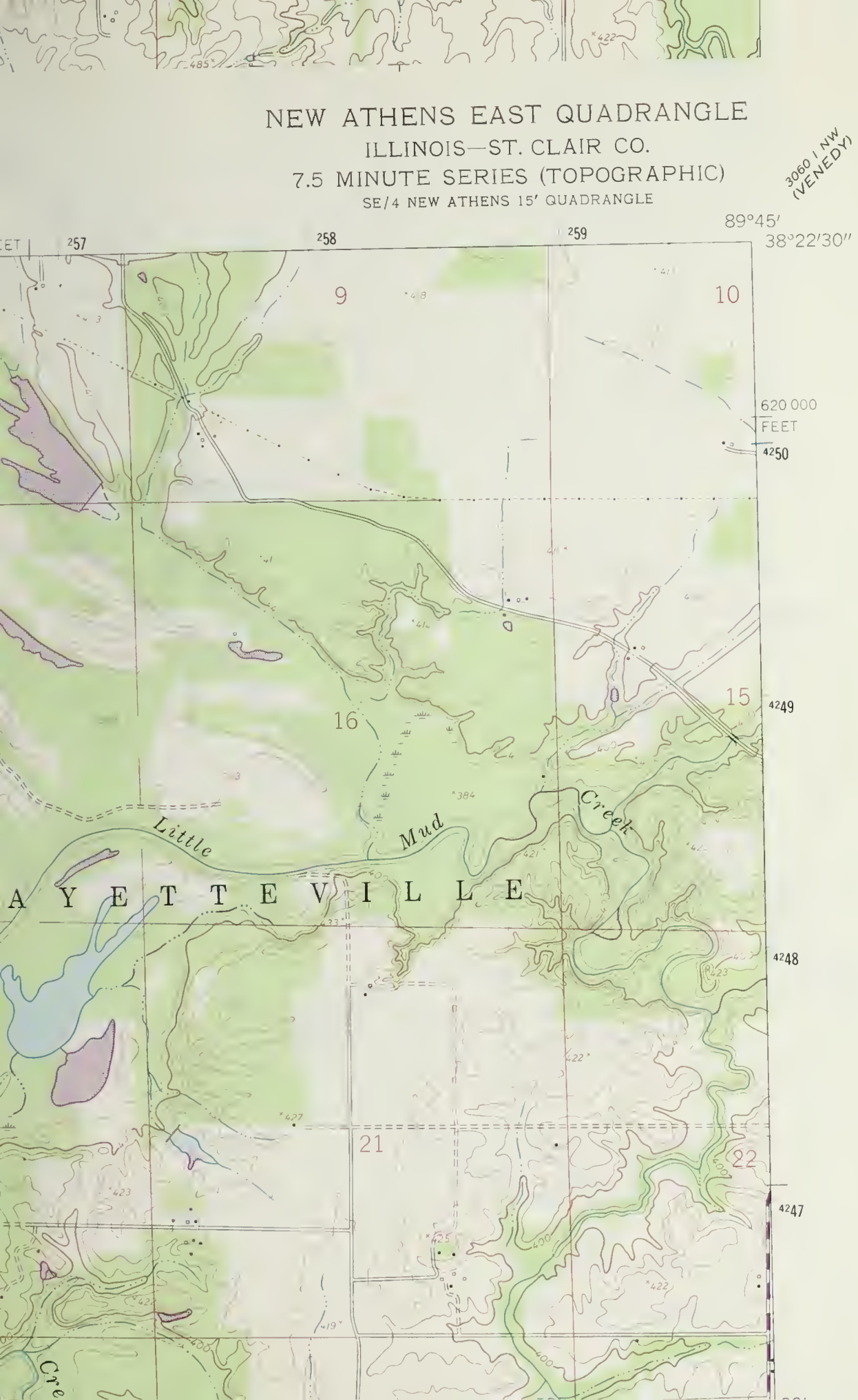
- PAID GROUND OR RACE COURSE
- DRIVE IN THEATRE
- GAUGING OR TURNING STATION (GENERAL)
- SCENIC SITE
- LOOKOUT TOWER
- COMPRESSOR OR METERING STATION
- GRAIN STORAGE BIN
- SAWMILL (STATIONARY)
- STORAGE TANK
- RADIO OR TELEVISION STATION
- SEASONAL DWELLING (OTHER)
- CAMP OR LODGE
- OIL OR GAS WELLS
- STATE HIGHWAY POLICE STATION
- PUBLIC HATCHERY
- FIRE DEPARTMENT
- MICROWAVE STATION
- ITEM 01 TOLL PLAZA (TI) OR WEIGHT STATION

(1) Rural Roads or State Routes and Streets in Non-Municipal Use
(2) Not Indicated on Municipal Streets

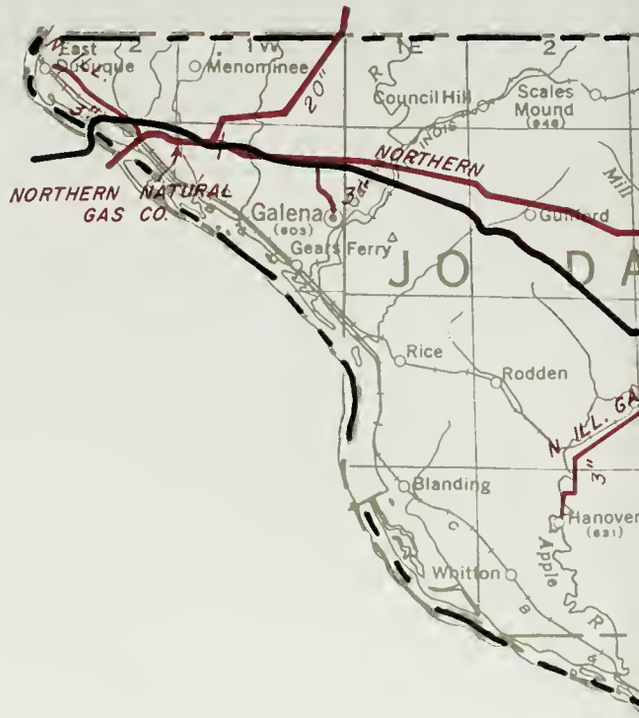




SHEET NUMBER MAP ST CLAIR COUNTY ILLINOIS


NEW ATHENS EAST QUADRANGLE
ILLINOIS—ST. CLAIR CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
SE/4 NEW ATHENS 15' QUADRANGLE
3060 I NW
(VENEDY)
89°45'
38°22'30"
257
258
259
9
10
16
15
620 000
FEET
4250
4249
4248
4247
Little
Mud
Creek
A Y E T T E V I L L E
21
22

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
UNITED STATES
DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS
NEW ATHENS EAST QUADRANGLE
ILLINOIS-ST. CLAIR CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
Fayetteville
Drum Hill
KASKASKIA
RIVER
N E W A T H E N S
F A Y E T T E V I L L E
Little Mud Creek
Mud Creek
New Athens
STRIP MINE
Dutch Hill
Zion Ch
Lenzburg
M A R I S S A
L E N Z B U R G
Doza Creek
Old Marissa
Marissa
NEW ATHENS EAST, ILL.
FOR SALE BY U. S. GEOLOGICAL SURVEY, WASHINGTON, D. C. 20242
AND BY THE STATE GEOLOGICAL SURVEY, URBANA, ILLINOIS 61801
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST



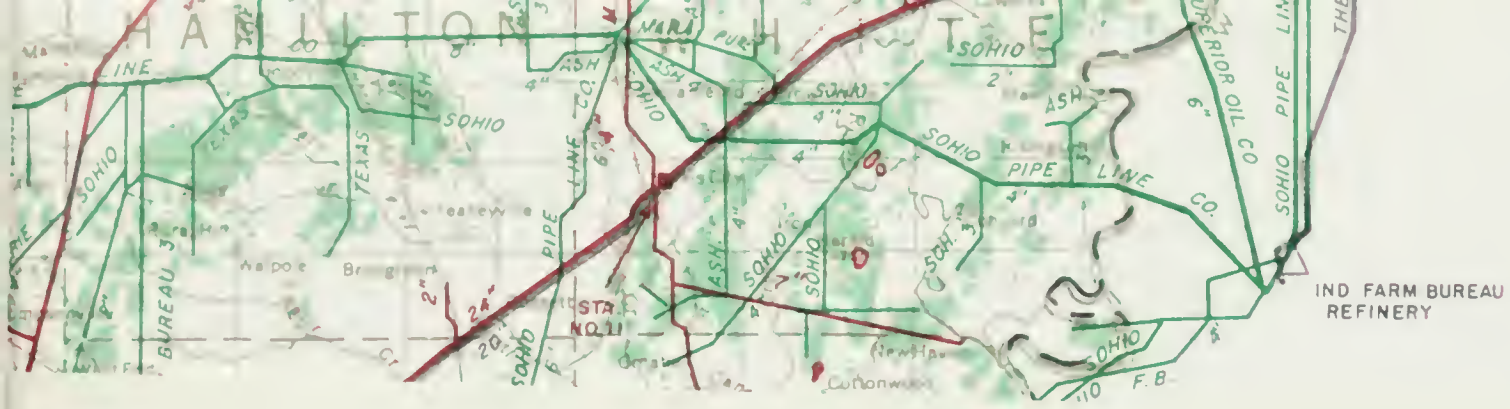
STATE OF ILLINOIS
DEPARTMENT OF REGISTRATION AND EDUCATION

ILLINOIS STATE GEOLOGICAL SURVEY

JOHN C. FRYE, CHIEF

URBANA, ILLINOIS 61801

OIL AND GAS INDUSTRY IN ILLINOIS, 1968


HAMILTON
SOHIO
PIPE LINE CO.
SUPERIOR OIL CO
SOHIO PIPE LINE
IND FARM BUREAU
REFINERY
STA NO 11
TEXAS
ASH
BUREAU
Cuthonwood